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ABSTRACT

Together with other publications in this series, this handbook addresses the issue of humanizing education. Specifically, discussion focuses on the role of critical thinking and reasoning in the educational process. Part one outlines reasons, requirements, and methods for teaching critical thinking and reasoning and connects critical thinking with philosophy and creative thinking. Part two, "Improvement of Teachers' Critical Skills," examines the following aspects of argumentation: deductions, assumptions, use of language, fallacies, implications and consequences, and use of evidence. Exercises illustrating these aspects are included. Part three, "Teaching Strategies," details activities and techniques for teaching critical thinking and reasoning; activities are divided according to the categories presented in part two. Appendixes present guidelines and a rationale for using discussion of values as a vehicle for teaching critical thinking, an analysis of critical discussions and the formation of commitments, and a discussion of possible influences on behavioral change. A checklist for exercises and a selected bibliography are included. (KS)

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THE HUMANITIES SERIES

CRITICAL THINKING AND REASONING

A Handbook for Teachers

A PROJECT SEARCH DEVELOPMENT

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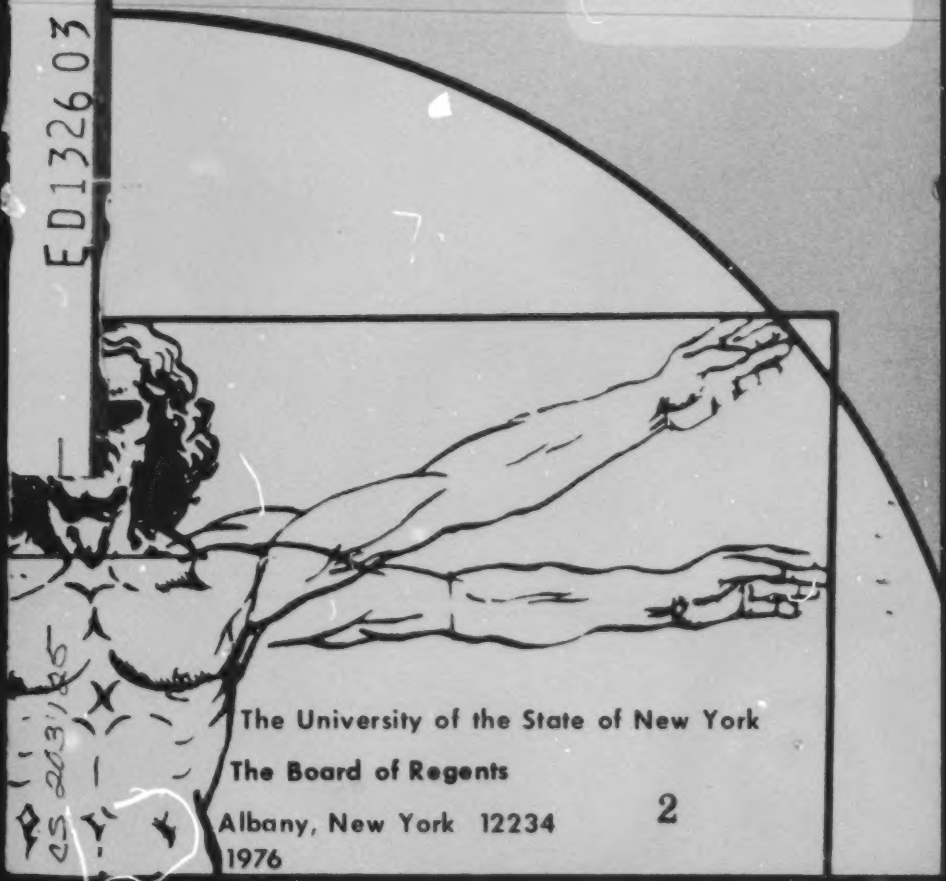

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THE HUMANITIES SERIES

The Humanities Series addresses essential aspects of contemporary humanities education, a process-oriented approach to human concerns, adaptable to varied content areas. The Humanities Education Unit personnel, responding to the growing demands of humanities educators in the schools, developed the series to provide rationales, flexible guidelines, and appropriate skills to meet the needs of students, kindergarten through grade 12, in an age of change.

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*Project SEARCH Developments, with support from the JDR 3rd Fund and Title III of the Elementary and Secondary Education Act. Project SEARCH, a pilot consortium of school districts across New York State, 1971-75, implemented the major objectives of contemporary humanities education.

Foreword to the Humanities Series

Critical Thinking and Reasoning addresses one major objective of contemporary humanities education. Together with the other publications in this series, the handbook outlines approaches and procedures useful in answering the pivotal question: How can we *humanize* all education?

No one single approach can adequately answer that fundamental question. But a handbook such as *Critical Thinking and Reasoning* can stimulate the learner to question himself and the world around him, to discover means of communicating through reasonable discourse, to clarify his thought processes and choose his value commitments. Mastery of these processes contributes immeasurably to each learner's control of his changing world.

The need for students to learn critical thinking and reasoning is rooted in the very nature of the educational process; i.e., the need of a learner to consider clearly and to assess critically all that he or she encounters in the process of learning. Whether a student is concerned with pure or applied sciences, with the arts, with political, economic, and legal systems, or with moral codes, he is unavoidably confronted with instances in which someone is attempting to connect one idea with another. It is in understanding the nature and strength of those connections that the essence of the learning process resides. This handbook aids teachers from all grade levels to implement these classroom skills.

The need to humanize education defines a vital educational goal. Few schools have succeeded in developing learning environments humanistic in process, in content, or in perspectives. The Humanities Series addresses aspects of concerns related to the value commitments open to each individual and to the consequences such choices have on the individual and on others. Contemporary humanities education seeks to achieve its objectives in four categories of student behavior:

1. *Reasoning:* If the freedom of man consists in determination of his choices by factors within himself, we often say that it is man's intelligence or reason which governs his purposive activity. Reasoning means the individual can modify her or his conduct to meet new situations. The person can not only change, but grow. Each one can profit from past experience. Each can become responsible.

2. *The Affective Domain:* Education has long concerned itself with the cognitive, with knowledge--as if there were only one kind of knowledge, factual data. However, a complementary aspect of knowledge, each person's affective powers, can deter or enhance his cognitive development. How a girl or boy, woman or man feels about wanting to learn, how she or he feels as each learns, and what each feels after learning--these lie in the affective domain. These neglected aspects, the vital area of attitudes and personally held values, form an integral concern of the humanizing learning process. Such self-awareness helps the possessor cope with change.

3. *Interdisciplinary Learning:* Fragmentation of learning, the separation of disciplines into isolated compartments, too often leaves even the able student frustrated. Knowing many facts, the learner still understands neither the interrelationships between disciplines nor their personal and social significance. The curriculum envisioned by humanities education integrates the arts; the physical, social, and behavioral sciences; and other disciplines, pursuits, and circumstances whenever such interdisciplinary instruction and experiences contribute to a whole life view.

4. *Values:* The basic values which undergird the American way of life and which have guided the actions of people for centuries are being severely tested in an era of rapid technological change, social readjustment, and population expansion. The shattering impacts of these changes are most visible among the young. Schools, to be successful in helping young people develop values that will give them a sense of direction, must offer opportunities for students to make free choices from among alternatives.

Reasoning, affect, and interdisciplinary learning are seen as supporting the process approaches to values development. These concepts cover a very broad range of human activity. The purpose of the Humanities Series is to help teachers design student learning experiences related to these categories.

Project SEARCH, a consortium of school districts in New York State (1971-75) developed in-service staff programs, curricula, and student learning experiences based on these four objectives. Several titles in the Humanities Series incorporate outcomes of Project SEARCH.

In addition, humanities education seeks to support these four objectives through three major strategies:

1. PROCESS APPROACH: Change is so rapid that no one can predict precisely what knowledge and information individuals will need to know in just a few years. Humanities education sees a compelling need to develop an educational approach based on adaptable process skills, secondarily on content. These process skills, transferable and dynamic, including the individual's perceptual, motor, affective, cognitive and social interaction skills, will enable a student to cope with a changing world.

2. UTILIZING COMMUNITY CULTURAL RESOURCES: Any system of education which represents a marked departure from traditional learning will fail if it ignores the community's needs, resources and aspirations. School and community must be integrally related both in planning and implementing educational change. Most adults have been educated under a system very similar to the system operating today. These adults must be involved in the new thinking and research on the nature of learning if we are to anticipate their cooperative support. In addition, the school must view the community as what it is, an extension of the school. Such interaction between school and community which encourages free reciprocal flow of learners and instructors can result in realistic, exciting learning activities. Not only will students enter the community for learning experiences, but professionals, craftsmen, artists, farmers, retired citizens will likewise share their competencies with youthful learners within the school.

3. INDIVIDUALIZED INSTRUCTION: Humanistic education focuses on the worth of the individual, on the self-actualization of each girl or boy. Implicit in the program are varied opportunities for each student to participate in sequenced learning experiences adapted to individual capacities and responsive to individual interests. Such learning experiences can help each student discover his or her potential; challenge latent abilities; prepare each to make his appropriate, unique and effective contribution in a changing society. The Humanities Series is dedicated to helping our youth by providing administrators and teachers with a process approach to all learning, a humanizing process which will enable our boys and girls to live not only the good life, but the life worth living.

CRITICAL THINKING AND REASONING embodies the approach to reasoning skills developed in theory and practice by Dr. Clyde Evans of the Department of Philosophy, University of Massachusetts at Boston. Dr. Evans used these materials in Project SEARCH staff development programs within New York State.

In Utica City School District, Utica, New York, Ms. Barbara Marchilonis of Seymour School, collaborated with Dr. Evans in developing teaching strategies.

Charles J. Trupia, Supervisor
Humanities and Performing Arts
Education Unit

Albany, New York
March, 1976

PREFACE

"Logic is the morality of thought just as morality is the logic of action," writes Jean Piaget in *Theory into Practice*. The familiar question, *How do I know what I think until I hear what I say?* may make us smile even as we acknowledge the substantial truth involved. Discussion can help us clarify our thinking, expand our viewpoints, integrate our diffuse insights and determine our value commitments. But the great good in this type of interaction is often dissipated in "rap" sessions in which participants lack ease in reasonable discourse. "Real cool, man," may offer encouragement and support to an idea, but the phrase offers little solid evidence of the speaker or writer's reasoning which leads him or her to offer this support. Yet unless we can develop this capacity to marshal our thinking in the service of our pursuit of who we are, where we are going, and in what spirit, we limit ourselves and our associates.

If this is true, the next question is, *What can we do to enhance our powers of critical thinking or reasoning?* More specifically, *what can we, as teachers, do to help our boys and girls, K through 12, equip themselves with these essential skills?* Dr. Clyde Evans has addressed himself to the theory and practice underlying substantial answers to these questions. Readers will discover in Dr. Evans' presentation a clear exposition of basic principles involved in critical thinking and reasoning. But over and beyond and above that valuable introduction or review, as the case may be, Dr. Evans is himself an excellent teacher. That quality comes through in his manner of speaking and writing. At ease with graduate students of philosophy, he is equally at home with young children who respond to his friendly and sincere regard for them as individuals. For all ages, Dr. Evans de-mystifies critical reasoning and thinking skills and makes them what they are, tools for richer human understanding.

And as for teachers, Dr. Evans wrote recently, "I cannot overemphasize how important I believe the teacher is--and I mean the plain, old, ordinary, everyday classroom teacher. I believe the role played by those individuals is one of the most important in all of our culture--to say nothing of their importance more narrowly in the school career of a child. Their formative hands influence the potential for so much good, so much growth. And in our present world, they must strive for these objectives under increasingly less ideal conditions."

Dr. Evans goes on to speak directly to teachers: "Hence this handbook is written in the belief that you, the classroom teacher, should be granted the recognition you so richly deserve. This handbook is written in a way which consciously recognizes and appeals to the crucial, pivotal role which you play in the total educational process. Finally, this handbook is hopefully written in a way which will both encourage and assist you in growing as a person and improving as a teacher--thus enriching that human resource upon which all our students so desperately depend."

In this spirit, the Humanities Education unit of the New York State Education Department offers *Critical Thinking and Reasoning* to the citizens of this State, especially to our school administrators, teachers and support staff. We are together in this great endeavor to humanize education for the girls and boys in our schools.

As Dr. Evans wrote: "This work is dedicated to all those who have helped me get where I am and be what I am. The seeds you have sown will bear much fruit."

Again, in this same spirit, the Division of the Humanities, Arts and Libraries expresses appreciation to Dr. Clyde Evans and to Ms. Barbara Marchilonis who collaborated with him.

William R. Clauss, Associate in Humanities Education, provided the leadership for implementing this component in The Humanities Series. Katherine V. King, Associate in Humanities Education, edited *Critical Thinking and Reasoning* for publication.

Table of Contents

Humanities Series..... ii
Foreword to the Humanities Series..... iii
Preface..... vii

Part I: Introduction

Why Teach Critical Thinking and Reasoning..... 1

Learning in General..... 3
Values Inquiry..... 4
Humanistic Education..... 8
Education of Persons..... 11
Why Teachers Need Critical Thinking and Reasoning..... 12

Requirements for Teaching Critical Thinking and Reasoning..... 14

Requirements of Teachers..... 14
Requisite Learning Environment..... 17

How to Teach Critical Thinking and Reasoning..... 20

Connections with Related Aspects..... 21

Critical Thinking and Philosophy..... 21
Critical Thinking and Creative Thinking..... 22

Part II: Improvement of Teachers' Critical Skills

Deduction..... 25

Exposition vs. Argument..... 25
Exercises: Exposition vs. Argument..... 27

Deductive vs. Inductive..... 30
Exercises: Deductive vs. Inductive Arguments..... 31

Valid Inference: Conditional Arguments..... 33
Exercises: Conditional Arguments..... 38

Valid Inference: Syllogisms..... 42
Exercises: Syllogisms..... 50

Assumptions..... 54
Exercises: Assumption..... 56

Use of Language..... 59
Exercises: Use of Language..... 61

Fallacies 64
Exercises: Fallacies 59

Implications and Consequences 77
Exercises: Implications and Consequences 77

Use of Evidence 81
Exercises: Use of Evidence 81

Part III: Teaching Strategies

Deduction 86
Objectives 86
Procedures 86

Assumptions 90
Objectives 90
Procedures 90

Loaded Language: Use of Language and Fallacies 95
Objectives 95
Procedures 95

Implications and Consequences 100
Objectives 100
Procedures 100

Use of Evidence 106
Objectives 106
Procedures 106

Appendices

A. Values Discussion: A Vehicle for Teaching Critical Thinking and Reasoning 110

B. Conducting a Discussion on Values 114

C. Critical Discussions and the Formation of Commitments 120

D. Critical Thinking and Reasoning: An Influence on Behavioral Change? 123

Checklist for Exercises 127

Selected Bibliography 132

Part I

INTRODUCTION

Why Teach Critical Thinking and Reasoning?

Many teachers feel the answer to this question is too obvious to require comment. At the same time, many teachers would sincerely appreciate an answer to the question because quite honestly they are not sure about the need themselves. This is a very legitimate question to ask: Why should we teach critical thinking and reasoning? An attempt to answer the question will not only provide some understanding for those who are uncertain, the attempt will also serve to remind the "true believers" of the rationale and justification for such teaching.

In the rephrased question the word *should* appears. *Should* emphasizes the fact that this is indeed a normative issue. The question attempts to get at the norms, standards, criteria by which we judge the desirability, effectiveness, efficacy, rationale, justification of teaching critical thinking and reasoning. This question attempts to discover those considerations which would help educators decide whether they need to teach critical thinking and reasoning. The answer will attempt to provide persuasive, convincing or even compelling reasons why educators at all levels *should* teach critical thinking and reasoning.

However, as with any normative discussion, the starting points will simply be assumed. Certain things will be taken for granted. Other persons may disagree with some of the starting points. Others, though not disagreeing with these starting points, may wish nevertheless to begin with others of their own. All this is, needless to say, perfectly legitimate and sincerely encouraged. No definitive rationale or justification appears here. Some points require defense, tenacious defense. Other points can be negotiated. Still other points can be yielded rather readily. These differences of opinion are not points about which readers should join combat. Rather, these views serve as one framework within which such teaching may be understood.

The views expressed here are based on the author's own experiences--with students (kindergarten through graduate school), teachers, administrators, and parents; his own philosophy of education and of life; his thought and reflection upon those experiences; his background and training; his personality and character; his idiosyncracies and predilections. If readers find in these views anything which rings a bell, or strikes a resonance within, or anything which is of value, then please use that element in whatever way proves beneficial to the growth of your students

and/or to you as a person. Taking exception to one or more points may stimulate the reader to articulate her or his own views more consciously or coherently. If so, then this work has still served its purpose.

The question proposed is: Why should we teach critical thinking and reasoning? Not every single facet of the question will be considered, nor will these comments work out every development in minute detail. These comments will merely sketch some of the kinds of considerations significant in arriving at an answer to the question. The following discussion will come at the question from different directions and indicate how in each case the need for the teaching of critical thinking and reasoning arises. Each educator is free to develop her or his own rationale--indeed, is encouraged to do so.

Learning in General: The need for students to learn critical thinking and reasoning is rooted in the very nature of the educational process; that is, in the need of a learner to consider clearly and to assess critically all that she or he encounters in the process of learning. Whether a student is concerned with pure or applied sciences, with the arts, with political, economic, and legal systems, or with moral codes, she or he is unavoidably confronted with instances in which someone is attempting to connect one idea (thought, thing) with another, or attempting to make inferences from one idea to another. And it is in understanding the nature of those connections, and in assessing the strength of those connections that the essence of the learning process resides. For true learning consists not merely in finding out that something is the case. It involves, more importantly, understanding the basis upon which that something is believed or thought or known to be the case. And here is precisely where the connecting of one idea with another appears. For what is required is precisely to show why, on the basis of X, Y is thought to be the case, or thought to be true, correct, and so forth.

In understanding this connection between the claim itself and the basis or ground for the claim, the crucial step in learning occurs. For when a student has grasped the nature of that connection, she or he knows not only the what, but also the why. The learner has not had a fact or claim or value merely impressed upon his memory or consciousness. Rather, the student has gained some insight and understanding into why such a claim is held, or why something is taken to be a fact, or how such a fact is related to other accepted facts, or why such a value should or should not be held. It is only when a student has some grasp of how the pieces fit together that the total picture can have any real meaning for that person. Only then can the student reconstruct the final picture for himself, because only then does he understand the nature of the relationships between the various pieces. Only then do we wish to say that a student has truly "learned," as opposed to merely being taught to respond in a certain way.

Now, if it is correct that this is what constitutes true learning--regardless of subject matter, or topic--then it is seen that at the heart of this true learning lies understanding of and facility with reasoning skills. This is so because quite simply these are precisely the skills required in ascertaining, detecting, assessing, and so forth, the connections between ideas, which (as we have seen) is the very essence of the learning process. These are the skills used whenever individuals attempt to connect one idea with another and to make inferences from one idea to another. Thus the need for reasoning skills stems from the very nature of the learning process. Furthermore, facility with these skills is an absolute prerequisite for true learning to take place.

In the application of these acquired skills true learning takes place: 1) The student focuses on the grounds, the support, the reasons *why* which stand behind the *what* she or he has learned. Thus, the student learns "from the inside out," and what the person learns truly becomes a part of the learner. 2) The student learns to assess critically the thought behind what she or he is taught, and not just blindly to accept the result or product of that thought. Thus, for example, students learn to attend to the reasons *why* a historian or archeologist teaches that certain things about the past are true; that is, they look at the basis the archeologist has for believing such a thing to be true; they attend to the rationale behind why an artist or writer teaches certain things about life or about human nature, they pay attention to the grounds a classroom teacher has for teaching that certain things are the case. 3) Students take what they have learned, trace out the implications of that learning, and see what meaning or significance (if any) it has for her or him in personal life. It is in this last feature, application to personal life, that any learning produces its "cash value." In these ways, a student can be truly said to (a) have learned something, as opposed to being merely *taught*, and (b) have learned something for himself, in the sense that what is learned remains not a mere tidbit to be displayed on appropriate occasions, but rather has somehow been woven into the total fabric of his life, and in some way enriched that life. And since all these aspects require the skills of critical thinking and reasoning, these skills form the very heart of the entire enterprise of learning and teaching.

Values Inquiry: Within the last decade, values education has roused wholesome, increasing interest among educators. In New York State, Project SEARCH involved a statewide consortium of school districts in an integrated humanities program pledged to four major objectives: 1) the development of reasoning skills; 2) interdisciplinary learning; 3) affective education; culminating in 4) values inquiry. Dr. Clyde Evans, author of this monograph, worked intensively with a wide spectrum of teachers in the Utica City School District, Utica, New York. The relationship between students' skills in reasoning and their development in valuing processes is the vital relationship between an essential tool and the integrating, culminating inquiry into personal values.

As a philosopher-in-residence, Dr. Evans was invited to spend a week with students in Hillside Elementary School, Hastings-on-Hudson, New York. Dr. Evans worked chiefly with 3rd and 4th grade girls and boys on value-related issues. Since then he has worked with students K-12, with teachers, parents, administrators, (sometimes in the same group) and with persons aged 5 years to 75 (also sometimes in the same group).

With the elementary school group, Dr. Evans' basic approach presents the children with a moral dilemma in which the girls and boys have to decide which course of action each would choose to follow. (These dilemmas are presented by means of filmstrips developed from the work of L. Kohlberg, and commercially available from Guidance Associates, New York.) This approach is not the only way to address value-related issues or to initiate a values-related class discussion. Here, Dr. Evans' main concern is not how the process gets started, but the nature of that discussion once it gets underway. To that extent, Dr. Evans believes his comments hold general significance for the whole area of values inquiry.

One of the moral dilemmas presented runs as follows: A girl is taken to the carnival by her father. It is her 7th birthday and he has promised her she can choose any five rides she likes. But as they approach the gate he discovers he has forgotten his wallet. This is the last day of the carnival, and the distance home is too far to go and return before it closes. He counts the change in his pocket and then tells his daughter that he has enough to pay the entrance fee; they could go inside and look at the exhibits, parades, etc. but there would not be enough left over for the rides. Or, she could lie about her age, say that she was six instead of seven, get in for half-price and then they would have enough left for the rides. She asks him what to do, but he tells her that she must decide for herself what she should do. They walk to the entrance gate. He says, "Two tickets, please." The ticket seller says: "One adult and, let's see young lady, how old are you?" The film ends.

Dr. Evans then simply engages the children in a discussion of what they would do in that situation - giving special attention to the reasons *why* they would do one thing rather than another.

There are two crucial demands which such an activity or discussion makes upon the children themselves. First, children must learn to separate the position they take from the grounds or reasons they have for taking that position. They must learn to see that the answer, solution, resolution which they finally choose is different, separate, and distinct from their reasons for choosing that solution, different from what it is that recommends that answer, different, in short, from *why* they choose the alternative.

Why is this required of the students? This distinction is required because otherwise this entire activity of investigation, consideration, discussion, interaction, cross-examination, weighing, choosing, in short, valuing would be a monumental waste of time. For either one makes such decisions by caprice (that is, without any basis) or one makes them on some basis or other. To avoid caprice or blind chance one must make decisions on the basis of

something or other; that is, must make decisions because of some consideration or other. This "something or other" provides the grounds, support, rationale, justification for that decision. Thus the notion of supporting grounds is central to the whole idea of valuing and the process of value formation. Hence such an activity requires that the students understand this notion, for otherwise there would be no point in discussing why, if the students had no notion at all of how what they choose is connected with why they choose it.

The second crucial demand made upon the student is that they be able to choose their grounds from among all that are offered. Even after the students have comprehended the notion of supporting grounds, it will not suffice for each student to merely formulate her or his own grounds for their own decision. The reason for this is very simple yet very important: there are always others in the group who are also formulating and expressing either grounds for a different alternative or different grounds for the same alternative. These other formulations cannot be ignored; they must be considered by any open-minded person. Hence, thoughtful students must attend to those other formulations before they can, with any confidence, finally formulate their own.

The students clearly have two tasks before them here. The first is obvious and relatively easy: choosing one of the available alternatives. However, the second task while not quite as obvious, is immeasurably more important: choosing the grounds, the reasons, from among the various possible grounds, upon which a particular alternative is selected. That is, it is fairly easy to say, "I choose this side." And after the students have understood the notion of supporting grounds, it is also fairly easy to say, "These are the reasons why I choose this side." (It is also, at this point, not too difficult to say, "These are the reasons why I do not choose the other side.") But the most difficult task of all, yet the most crucial for each learner, is to be able to say: "These are the reasons why I choose this side; and those reasons, while they might be reasons for others to choose this same side, are not reasons for me."

What is required, if the students are to make decisions for themselves, formulate values for themselves, is that they develop the capacity for discernment. They must, that is, be able to distinguish and differentiate the various reasons given for a particular position (choice, decision, alternative), and then assess and evaluate them for reasonableness, acceptability and adequacy. They must be able to weigh the different reasons given for a particular alternative, the different grounds that support it, the different considerations that recommend it, and judge these according to their (the students') own lights. They must be able to see that there are many different ways to look at a

situation, that many different lines of reasoning (thought) can be adduced in favor of a given alternative, but that not all are equally persuasive. Further, they must judge which are persuasive and which are not--to them individually. Hence, each student must have the capacity to judge the merits of a particular line of reasoning.

Perhaps an extension of the original example will illustrate this point. Regarding the carnival dilemma discussed earlier, Margie decides to tell the truth because lying would be unfair to the other 7-year-olds who paid full price. Walter chooses exactly the same course of action (telling the truth) but for very different reasons: the liar may get caught. Now this reason, if not totally incomprehensible to Margie, is completely unpersuasive to her. Thus Margie had to decide not only what to do, she had also to decide what reasons she had for so doing.

When the heart of this valuing process is isolated, it is clear that certain specific demands are made upon the students--by the very nature of the activity itself: they must learn to separate supporting grounds from the positions themselves; they must select the grounds for a particular position. These are requirements internal to the process itself. But clearly certain skills are necessary before the students can meet such demands. These are precisely the skills involved in reasoning and argumentation.

Thus, at the very heart of the valuing process lie the skills of reasoning, argumentation, and critical thinking. The possession and operation of these skills can be thought of as a foundation for the process of valuing and as a prerequisite for its success. To keep this student learning experience from becoming just a superficial "rap" session in which each person merely gives her or his "rap" and goes no further, teachers must insure the kind of critical interaction alluded to above. It is not sufficient to merely have each person lay their values out on the table. Teachers must have the kind of attending-to-reasons described above, and which is not possible unless the students possess these specific skills.

The implications of this are clear: if teachers prize the valuing process in the classroom, then they must give some attention to equipping students with the skills (tools) necessary to fruitfully engage in this process. In short, teachers must teach students specific reasoning skills. It can now be seen that the necessity of teaching these skills grows intrinsically from a particular activity (valuing) which at first glance might seem to be totally separate and distinct from "cognitive skills."

Analysis here of the essence of the valuing process suffices to show that the students must be equipped with these reasoning skills before any substantive, fruitful valuing can take place.

Humanistic Education: A good deal of attention in recent years has been paid to what has come to be called *humanistic* education, and to programs, activities, teaching strategies which *humanize* education. This laudable trend represents a valuable emphasis. Yet attention to this area reveals some questions which remain as yet unanswered. The basic question is simply this: What is *humanistic* education? Other questions: What would count as an instance of humanizing education? How could we recognize it? Since *humanizing* seems to be a verb, what exactly is it that we are doing to education in our attempt to humanize it? *Humanize* appears to have something to do with *human*, or being *human*, or being *humane*. Perhaps we wish to make education more *human*. What *more human* amounts to is still hopelessly vague and ambigious. But leaving that problem aside, the attempt to make education more *human* could still be compatible with several different viewpoints: 1) Some educators wish to make the end product (of education) more human; 2) some wish to make the process more human; 3) some wish to make the content more human.

No attempt will be made to answer these questions directly here. Perhaps readers would like to ponder them themselves. The following statement involves a great oversimplification, but one not completely without benefit. In working toward a definition of *humanistic*, let it be assumed that either its meaning is fixed or its meaning is changing.

Suppose that the meaning of *humanistic* is fixed. Then *humanistic* expresses the notion that some concept or model or idea (or complex of ideas) expresses and captures what *humanistic* means. This interpretation claims a constancy about human nature and thus a constancy in the notion of humanistic. Advocates claim that this notion has been distilled and formulated long since and remains as valid now as ever. According to this view, teaching what *humanistic* is, involves quite simply teaching or transmitting or handing down the content of this stable, fixed idea.

Now even if this notion of what *humanistic* means is acceptable, and even if educators strive to be *humanistic*, advocates must teach or transmit this notion in a way which most preserves and respects those features of the learners (that is, the recipients) which are most characteristically human. And certain assumptions appear to be not only in conflict with these characteristics, but to be positively de-humanizing. Students are not inert beneficiaries of some kind of sacred tradition, humanistic or otherwise, handed down to them. They are not mere receptacles into which one deposits truth or wisdom. To be treated as a mere spectator is de-humanizing. To be treated as an object, to be molded, formed, maneuvered, or manipulated, whether by current popular myths or by "the true wisdom of the ages," is de-humanizing. For all these attitudes deny to the student the one thing most necessary to a human being: the opportunity to perceive oneself in a living, creative, and effective relationship with surrounding reality.

True humanistic education, even understood in the static sense of humanistic described above, would be education which seeks to do more than merely inform the student about what *humanistic* means, to do more than merely impose such a model upon a person. Rather, true humanistic education would seek to encourage the student to transform and create himself according to a particular model of features thought to be most characteristically human. Humanistic education would also predispose a student to constantly re-evaluate, to analyze her or his findings, to make judgments. This true humanistic education would encourage students to perceive themselves in a dialectical relationship both with themselves and with the world about them. Regarding themselves, they would be constantly re-evaluating their own nature, what they are, what they could become. Regarding the world, they would be constantly re-evaluating the nature of the world, what it is, what it could become, for human beings. Then afterwards they are prepared to make choices, and to strive, in a critical manner, to transform what they are and what the world is. This is the stuff that human beings are made of, and these are the experiences, insights, and perceptions to which humanistic education must appeal.

Thus, true humanistic education encourages a student to make himself human. But this understanding now begins to merge into the second alternative. For suppose that different individuals make themselves into different human beings. Suppose furthermore, that the very notion of "human being" is not a closed notion. Humanity then becomes an ongoing process which is unfinished. Man creates and re-creates his cultural reality; and part of that cultural reality is *what humanity means and can mean*. Thus, those humanistic characteristics are not a set of traits or behaviors or truths or values which have been discovered, once and for all, and which forever remain thereafter the same. What *humanistic* signifies is evolving just as human beings evolve.

This means that these truths cannot be given to children or adults like precious jewelry: "Here, keep these jewels safe." Instead, humanistic educators say,"Here are the values many persons have found to be good and helpful. This is the reason we, as your teachers, take them to be so. Now you take them and apply them to your world, and see if they are good and helpful for you."

So to make education more humanistic means more than just including a bigger or more exciting dose of what others have said is humanistic. True humanistic education requires an education which equips, prepares, and encourages a student to participate in the act of becoming human, to forge for himself what being human means in the world which he inhabits, to create himself and to create *humanity*.

This requires students who can do more than just receive the *sacred word*. This requires students who are able to do even more

than receive and assimilate the *sacred word*. This requires students who can 1) receive what educators give them, 2) assimilate what they receive, and 3) transform, when necessary, what they have received and assimilated, in order to better fit the conditions of their world. They must, that is, be able to tell us something which is new, something which has never been told or even known before: they must tell us what it means to be human in this new world.

They must be able to see the worth and value in something for themselves. In short, they must be able to think for themselves.

So far, consideration has been directed toward the need and the desirability of teaching the habits of critical thinking in general and the reasoning skills in particular. However, even if one agrees with every statement made so far, there might still be some disagreements or divergence regarding what might be called the "total context" within which such learning by the students would be placed, or regarding the value to be placed on certain portions of that total context relative to other portions. In particular, there might very well be disagreement about what constitutes the major advantage or the most important feature or the greatest gain resulting from such learning by students. In other words, now that the students can think critically, what is critical thinking good for? One aspect of this question will be reserved for later development. Some other features require comment here.

Each reader should feel free to answer this question in whatever way the individual sees fit, consonant with her or his own best judgment. Each should feel free to use the suggestions, ideas and views contained here in whatever way the person deems appropriate to the individual's over-view or "total context." Hence, the writer does not wish to instruct any one about how these ideas should be used, or what attitudes any individual should have toward them. Not imposition, not "laying on," but sharing some clear and definite notions is the intention.

The teaching of critical thinking and reasoning is both necessary and desirable. Every effort should be made to forward such teaching. Yet the goal of such teaching is not to make learners more intellectual or even more "intelligent." Some readers may misunderstand the following statement, yet the statement must be made, and made emphatically: the major goal in teaching critical thinking and reasoning is not to make students more logical. The term logical here refers to the everyday sense conveyed by "she or he is very logical." This sense connotes and suggests a person who always goes straight to the heart of the matter, one who is never distracted by extraneous or irrelevant elements; who moves inexorably from point to point; who always knows exactly why this is this, why that is that. These behavioral objectives are

decidedly not the objectives for teaching students critical thinking and reasoning. The major objective is: that students will improve their logical abilities and increase their critical capacities.

Sheer logical prowess is not the goal. Computers can perform with impeccable logic. Educators are not teaching computers; they are persons teaching persons. And the great challenging truth about a person is that she or he is more than just a logical network equipped for reasoning and thinking. A person has not only thoughts. As opposed to a computer, a person also has feelings, needs, fears, desires, prejudices, values, sensitivities, principles, talents, responsibilities, virtues and vices. Thus logical ability is only one of a number of facets that go into making a whole person. Concentration on logical ability at the expense of other facets is not the emphasis. The goal is that students be able to "maximize" their entire set of personal resources.

Hence, these learning experiences are not intended to develop geniuses, or intellectual or brilliant minds. The goal is to help students develop into sounder persons, by developing those human characteristics that make them what they are, and by so doing produce an overall array of facets more sound, more solid, more substantial than would be achieved by over-emphasizing one or another facet. Reasoning developed along with other features, this embodies the goal of critical thinking and reasoning in humanistic education. Reasoning has an essential value of its own, a value prized by humanistic education as probably the single most powerful tool human beings possess in their attempt to understand their universe and to make sense in their individual lives. But reasoning exalted above all else, and at the expense of all else is disproportionate. Reasoning is not man's only tool, nor is it his most important tool.

Reasoning power is a tool, a tool capable of being sharpened, a tool students can learn to use, a tool to be used clumsily or adeptly. But the greatest workman, craftsman, or artist is one who knows when to use which tool for which task. But if a person has developed facility in the use of only one tool, then that person is limited in choosing the right tool to handle this situation. Abraham Maslow claims that "if the only tool you have is a hammer, it is tempting to treat everything as if it were a nail." If reasoning is the only tool a student has developed, she or he may be deluded into trying to negotiate each situation by means of this tool.

Education of Persons: It is important not only to develop this tool of reasoning, but also to develop a larger array of other tools, instruments by means of which a person can cope with the

diverse situations which will inevitably arise in his life. Educators should always try to remember that reasoning is always an interchange which takes place between persons (unless we have computer tie-in, either to ourselves or to another computer.) And since persons are not purely logical beings, what takes place between them is not a purely logical event. When one person interacts with another person there is more to consider than merely the logical features of the ideas discussed, even when these logical features are the avowed objective of the participants. This is not to say participants must sacrifice logical clarity for the sake of some other considerations. It is only an admonition not to ignore all else for the sake of logic. It is never solely an idea or an argument that one addresses, interchange always involves a person-expressing-an-idea-or-argument. Use of reasoning and logic to obtain all the benefits derivable from them implies at the same time, their use in a manner which enhances (at least does not diminish) the self-image of the other person engaged in this use of reasoning.

These views have great effect on much of the following development related not so much to the what, as to the how. Such views make a big difference: the motivation of the students to learn critical thinking and reasoning, their readiness to absorb and apply what they learn, the manner in which educators teach critical thinking and reasoning, the requirements and demands they make of the students, the expectations they have of them, the way in which what is learned is used in the classroom, the use to which they will put their learning outside the classroom, the manner in which they will use it--all these aspects are influenced.

Why Teachers Need Critical Thinking and Reasoning: The basic reason why teachers need to learn critical thinking and reasoning is "You can't teach what you don't know." There are many different ways in which critical thinking and reasoning could be taught. More will be said about these ways below. At this point this handbook assumes that there are very few instances in which a student faces a totally programmed, completely automated learning system, requiring no teacher at all. And anything short of total automation requires a teacher in some capacity or other, however small. And even if the teacher has only a minimal interaction with the student, the teacher must understand what it is that the student is learning. Hence, even here, the teacher must be proficient in critical thinking and reasoning. However, realistically speaking, the overwhelming majority of cases are such that the teacher has a major role in the learning of the students. Thus it is even more crucial here that the teacher possess these skills.

In this method of teaching critical thinking and reasoning, the role of the teacher, after the first introduction to these skills, is to help the students become more consciously aware of the reasoning which takes place all the time, and in which they are already engaged. Reasoning is not something the students will learn to do for the first time. It is a process they have engaged in all their lives and will continue to carry on, in nearly every aspect of their lives, whether it is done accidentally or by design, haphazardly or systematically, thoughtlessly or deliberately, carelessly or carefully. The service the teacher can perform is to get them to focus and reflect upon what they are already doing. The teacher's job at this point, in this model, is essentially to put up signposts which say "Look! Notice what just happened!" But to do this the teacher must 1) know what the signposts are, 2) understand why they are signposts, and 3) be able to recognize them when they appear. In short, the teacher must understand and be proficient in critical thinking and reasoning.

One cannot teach a person to be critical, thoughtful, reflective, logical, if one is not so oneself, because these are precisely the skills involved and required in the teaching itself. So, a prerequisite for teaching critical thinking and reasoning is the learning of critical thinking and reasoning by the teachers. Again, this is no new skill for teachers. But what can be done is to polish and improve the critical skills teachers already possess. They can also obtain some systematic overall framework from which to help each student improve her or his own abilities. This handbook is designed to accomplish both goals: 1) help teachers to improve their own critical abilities; 2) provide teachers with the framework, the guidelines, and some suggestions for helping students to do the same.

Requirements for Teaching Critical Thinking and Reasoning

Requirements of Teachers: In the preceding section, one essential requirement for the teaching of critical thinking and reasoning was stressed; that is, the teacher must possess the requisite skills. In a much broader sense, other requirements are demanded. These further requirements relate to other aspects; e.g., the need not only for reasoning skills, but also for critical thinking, plus the fact that educators are not teaching computers (or robots) to correctly perform a task or demand, but rather teaching persons to be more critical. These features will result in certain demands upon the teacher who purports to teach critical thinking and reasoning, demands which are quite global in nature.

Critical thinking must be distinguished from mere reasoning skills. Critical thinking requires not only possession of certain critical skills (i.e., reasoning skills), but also possession of what might be called the "critical spirit" or "critical attitude." Mere possession of certain skills entails only the capacity to perform certain tasks at will or on demand. The other feature concerns the "attitude" one has regarding the use of such skills. The critical attitude differs from the mere capacity to be critical of certain types of performances. For example, this critical attitude says the criteria used in judging such performances must also be judged. Thus teaching students to be critical is more than just teaching how to do certain things; it is teaching each student to look critically also at the value of the performance in which he is taught to engage and the tasks he is taught to perform.

This critical attitude thus inclines a student to use critical skills not only for "exercises," but for everything in which the student engages. This critical attitude inclines the student to be critical (apply his critical skills) not only when called upon by the teacher, but anytime when "called upon by the circumstances." This critical attitude inclines the student to be critical not only while in class, but all the time. In short, this critical attitude inclines the student to make this critical posture a pervasive feature of his life.

Now how does this critical attitude issue in demands upon the teacher? Earlier, it was noted that in order to teach critical thinking and reasoning, the teacher must be proficient in critical thinking and reasoning. After the discussion in the preceding paragraph, it is obvious that the point there referred specifically to the reasoning skills. In order to teach reasoning skills, it is necessary that the teacher be proficient in reasoning skills. But notice that this is not the same as saying that in order for students to learn reasoning skills it is necessary that the teacher

be proficient in reasoning skills. For it is perfectly possible for students to learn in spite of poor teaching, or in the absence of any teaching at all. (In this sense, the concept and the activity of teaching are parasitic upon that of learning; quite simply, learning can take place without teaching. Too much "teaching" may be going on and not enough "learning.") So it is possible for students to learn the critical skills without the teacher being proficient in these skills.

However, this is practically impossible with respect to the critical attitude; it is not possible for the student to develop a critical attitude if such an attitude is not manifested by the teacher. (This is obviously an idealized description in which we ignore all other influences upon the student outside the class.) A student will not develop such a critical attitude unless the student is encouraged and allowed to be critical. And this encouragement and allowance is impossible unless the teacher not only possesses such a critical attitude, but places a value upon that development in the student. Being critical can only be taught by a person who can freely engage in a critical discussion with her or his students. Developing a critical attitude can only be encouraged by one who possesses and manifests such an attitude. Thus, the teacher, himself, must possess the critical attitude. Otherwise, the students will see all too clearly that the teacher is telling the student to do something which the teacher is unwilling to do or is incapable of doing. This will be seen as the hypocritical sham that it is. And the harm done could be much greater than if the subject of critical attitudes had never been raised. The teacher must be willing to display the same spirit and attitude of critical examination and inquiry which he is teaching to his students. This is a tall order, don't be misled, but is is far from all.

If the student is to be encouraged to become genuinely critical in the thorough-going fashion described above, then it will not suffice for him to engage in critical discussions, say, every Thursday morning from 10:00 a.m. to 11:00 a.m. Hence, it will not suffice for the teacher to manifest a critical attitude only on Thursday morning from 10:00 a.m. to 11:00 a.m. If this critical attitude is to permeate each student's life, than it must begin permeating right there in the classroom, not only from 10:00 a.m. to 11:00 a.m., and not only on Thursdays, but anytime and in any subject. A student will be genuinely encouraged and motivated to be critical only if she or he discovers that both the student and the teacher can be called upon at any time to defend what they say; i.e., to produce the relevant kind of basis or ground for what they say. This means first that there can be no "safe" time when the teacher does not have to anticipate the students asking embarrassing questions like, "Will you please back up what you just said?" This

means, secondly, that there can be no "safe" area; that is, subjects about which the students will not ask hard questions or about which they will not be allowed to ask hard questions. For, again, if teachers are encouraging this critical attitude as a pervasive feature of student outlook, they cannot capriciously or arbitrarily reduce the application of such an attitude to certain times or certain topics. Thus, there can be no "sacred preserves" which in principle lie beyond the reach of this critical approach. It will not do to say that the participants will critically examine astrology but not christianity, or to say they can be critical of promiscuity but not of monogamy, or to say they can critically assess welfare but not standard deductions for dependents. Again, such exclusiveness would be rightly seen as hypocritical by learners.

But these are great demands for teachers to meet, they must not only display a critical attitude, but they must do so at all times and on all subjects. In short, a teacher who embarks on this course must make the same commitment being asked of the students. The course toward making this attitude pervasive in her or his life is no easy road. The teacher must do it first, else the students never will. The pervasiveness of this course is what led to calling this demand a global one.

Every word printed above concerning the demands on the teacher is true, but those demands need not, must not "scare" teachers away. Based on personal experiences in meeting these demands (and sometimes succeeding rather well) the writer can assure teachers that this openness to questioning does not mean that day in and day out every single minute of class is spent with everybody asking everybody else to back up what each other says. Not every word out of the mouth of the teacher is considered a signal to attack. The position of the teacher, in the eyes of the students, as one who is more knowledgeable, more experienced, more expert, and as more of an authority is essentially unchanged. But the teacher's position as an oracle will change a bit. The students will not declare open season, they will merely adopt a more critical stance and learn to accept what a teacher says because of the merits of what is said rather than merely the source from which it comes. In conjunction with what has been said above about the interaction of persons in such episodes, the key factor is the understanding that everyone (students and teacher) has about what they are doing. If that shared understanding is sound, healthy and growth-producing then not only will the class not degenerate into an orgy of mutual criticism, but even when critical questions are raised (of either the teacher or of the student) this will be done without an "attack" mentality. This leads naturally to another issue regarding requirements for teaching critical thinking and reasoning.

Requisite Learning Environment: Experiences in diverse situations and conversations with a variety of persons involved in similar critical thinking and reasoning activities indicate that, for the successful teaching of critical thinking and reasoning, two factors are absolutely crucial, the teacher and the environment prevailing in the classroom.

Much has already been presented related to the classroom environment or climate or atmosphere. If the kind of critical interaction proposed for the classroom were a purely logical interaction, then discussion about the environment could be dispensed with. But in critical thinking and reasoning one idea or proposal is not simply being juxtaposed against another. Rather, one person (proposing an idea) is juxtaposed with another person (proposing a different idea). It is a person who is the possessor of the idea. Hence, in a discussion, participants never address an idea directly; rather, they always address the idea through the person or, to express the notion differently, participants address the combination person/idea.

This feature is not so important if discussion forever deals with trivial issues. For then the stake that the person has in the idea is fairly small, and the bond between the person and the idea is much more tenuous. Hence, the person can, with relative ease, dissociate himself from the idea. Then the nature of the reception given the idea and the manner of the response to the idea are not taken to be so tightly connected to reception of and response to the person who proposed it. But as soon as discussion encounters important issues, and obviously this is desirable at some time or other, all is completely reversed. Now the person is intimately involved with the idea.

There is a way out here which is sort of a middle ground--discussion could cover important issues, yet engage in trival talk (propose trivial ideas, make trivial comments). By "trivial" is meant talk which is nothing more than clichés, niceties, superficial remarks which have no connection whatsoever with the real, true, important thoughts and feelings of the speaker. Talk, that is, which allows one to say something, but without saying anything about oneself; talk which in no way engages what it is that makes that person that person. This kind of exchange happens all the time, of course, as in our American custom called the cocktail party. Such discussions, with their participants, should not necessarily be banished from the face of the earth. But not all discussion will be such, one dares hope. If not all discussions are trivial, then participants face a "whole new ball game" in which the individuals must attend to the vital person/idea combination.

In discussions of important matters, students make important statements; i.e., important to them. Now since by assumption the ideas expressed are important to them, the students will feel more closely identified to the ideas themselves. And now it is inevitably the case that the response to the idea (comment, etc.) will be perceived as a response to the person to some degree or other. And the success or failure of the entire enterprise will depend upon the nature of these perceptions.

Hence, the climate in the classroom, as perceived by the students themselves, must be non-threatening and secure. Students urgently need to be convinced that their personal worth is secure in such an undertaking. The reason for this is very simple, yet very important --if a student does not feel thus secure, then he will never risk himself by saying anything important because, by definition, when one says something important and puts it out in the open, one also puts oneself out in the open (since the self is inextricably tied-up with what was said). Thus, if a person cannot feel secure about the reception of his idea, *a fortiori*, he cannot feel secure about the reception of his self. And in such a situation there just is not sufficient reason to take such a risk. So the student will simply resort to trivia or silence.

Thus, the relationship between all the students must be such as to create this kind of environment. If a given student is not to feel thus threatened, then quite simply this means that the other students must not threaten him. And since this applies equally to every student, this means that the students must not threaten each other. This is not to say that one can never be criticized. It only means that when a criticism is made, it is not made in the spirit of an "attack." The students must learn to separate the issue from the person, and learn that even though they may wish to be critical of the issue they must yet be protective of the person. This is obviously not solely in the hands of the teacher; it cannot be accomplished by the teacher alone. It must be done by the students themselves. Thus, the nature of the enterprise makes certain demands also upon the students.

Though the teacher cannot meet these demands for the students (the students must do it themselves) the teacher is again a key factor. I believe that here, more than at any other point, the role of the teacher as a model is crucial. Clearly, the part played by the teacher is not unrelated to the environment of the classroom. Experience testifies that the teacher's posture is a key factor regarding the climate in the classroom: the teacher's attitudes, moods, patience or impatience, biases, blind spots, tolerance or intolerance, understanding, willingness or unwillingness to admit error, or merely fallibility, resentment at embarrassing questions, response to being shown to be in error, response to student negligence and irresponsibility, any thoughtless response to the ridiculous and silly, the teacher's treating students with respect or disrespect, the teacher's

granting students autonomy. Of particular significance is whether the teacher interacts with students in a way which threatens them, either by her or his questioning or in responding. If a teacher can successfully interact with students in a non-threatening way, yet in a way which encourages, and gently yet firmly demands the best of their blossoming critical abilities, then there is a good chance that such an environment can come to pass. For if the students can see the teacher interacting in this non-threatening way, time after time, day after day (and it does take time), then they will begin to get the idea that, (1) the teacher is serious and sincere in those actions and (2) they, the students, too, can interact in such a way both with the teacher and with each other. And once that point is reached, experience has shown, time and time again, that the students themselves will assume more and more of the responsibility for encouraging and maintaining such an environment among themselves.

How To Teach Critical Thinking and Reasoning

How to teach critical thinking and reasoning rests primarily with each teacher in her or his particular situation. But several general approaches have merit. One useful approach is to have on hand critical thinking and reasoning materials. These materials serve as a common starting point for students. As a first step, this approach provides an overall framework and a detailed work plan. All the students have a tangible reference; the teacher has a solid base upon which to build and from which to expand. Dr. Matthew Lipman is doing admirable work in this area of curriculum development at the Institute for the Advancement of Philosophy for Children, Montclair State College, Montclair, New Jersey. Dr. Lipman presently has available materials for grades 5 and 6. He hopes, over the next three years, to have expanded the materials to include grades 4 through 12.

Also valuable in this vein is the use of individual study modules or study units for students. These units can be fully programmed, requiring minimum teacher interaction with students. And a series of these modules can be combined to constitute a self-paced program for different students. Dr. Edward D'Angelo at the University of Bridgeport, Connecticut has done some work in this area.

In addition to having special critical thinking and reasoning materials, a second feature could be the allotment of certain time slots designed specifically for the study of critical thinking and reasoning. Earlier comments indicate that critical thinking and reasoning should not be restricted to any such time slot. But at the very beginning, this allotment is very helpful. A certain amount of information must be absorbed by the students, a certain amount of material grasped, a certain number of concepts understood, and a certain number of skills developed. Such a regular time slot (say, weekly) would provide the base for laying this groundwork.

Then eventually, what has been learned (and what continues to be learned) should be woven into everything that takes place in the classroom, all the different topics, all the different discussions. The first two features are useful by way of groundlaying. But the real "payoff" occurs when the students can then utilize what they have thus learned and apply it to everything else they do.

Connections with Related Aspects

Critical Thinking and Philosophy: A number of educators presently are working to help bring about a more systematic inclusion of philosophy into the educational process at the pre-college level. The first National Conference-Workshop on the Teaching of Philosophy at the pre-college level was held in August, 1976, at Union College in Schenectady, New York. Among other topics, this conference will focus on philosophy at the elementary level. The Institute for the Advancement of Philosophy for Children has already been mentioned. These endeavors, and others on smaller scales, are an attempt to introduce the pre-college student to the breadth and depth of the philosophical tradition in our culture. It is an attempt, basically, to capture the curiosity and wonder of all individuals, and to follow that up with persistent, sustained effort to understand--the universe, ourselves, and our place in it--just the questions that philosophers have wondered about for ages.

Obviously embarking on such a journey leads one to many big questions: What is the world really made of? Why is the universe made the way it is? Where did it come from? Who made it? Can we ever know the answers to such questions? Can we ever know anything for sure? What can we know for sure about ourselves? About others? How do we know which things are right or good for ourselves? Are they good or right for others also? All others or just some others? How do we determine our interactions with others? Who decides what is allowed and what is not? Should everyone have a say in this or only some? Why should I do what others tell me and obey their commands and laws? What happens when this life is over? Anything? Can I know this now? These are just the questions, to list but a few, with which philosophy deals, and which will likewise be faced by anyone who pursues philosophy.

However, to maximize the chances for fruitful pursuit, there are certain skills a philosopher needs, skills for reasoning, argumentation and critical thinking. These are necessary tools for anyone wishing to embrace philosophy. Thus, the development of these skills is a necessary feature of any attempt to introduce philosophy to the pre-college student. (Thus, for example, logic plays an important role in Professor Lipman's curriculum materials so far.)

At the same time, it is also possible to attend to these reasoning skills without doing so as part of a larger endeavor. This is the scope attempted here (though the author is also one of the people concerned and working for the development of pre-college philosophy). The objective here is not to begin the introduction of a program in philosophy. It is, relatively

speaking, a much smaller one, the introduction of explicit attention to critical thinking and reasoning. This present work is not concerned especially that these skills be subsequently used in grappling with the fundamental problems. Rather, the present concern is only that these skills be developed well and then used with whatever it is that appears to the students in their daily lives as important enough to wonder or care about. If the fundamental questions are indeed fundamental to them, they will appear, have no doubt. When that happens, they will have the skills necessary to deal with them. Until then, they will apply their skills to whatever seems appropriate.

In this connection, the examples used here come directly from the realm of daily existence, from newspapers, magazines, television, etc. For these are the forums most frequently and most immediately encountered by the students. This connection is also continued in the specific procedures suggested in Part III.

Critical Thinking and Creative Thinking: A few words about critical thinking and other kinds of thinking follow. Varied expressions currently in use relate to thinking processes: critical thinking, productive thinking, perceptual thinking, cognitive thinking, concept formation, straight thinking, problem solving. Many of these terms share similarities, but this work will not address exact comparisons. In particular, much has been written concerning the connection, or lack of connection, between critical thinking and creative thinking. Some of the commonly accepted distinctions between critical and creative thinking follow.

In critical thinking, rightness is what matters; in creative thinking, richness is what matters. Critical thinking helps you avoid mistakes; creative thinking helps you generate new possibilities. Critical thinking moves in one direction; creative thinking is more suggestive. Critical thinking is more step-by-step; creative thinking is more round-about. Critical thinking emphasizes the correctness of each step leading you to a correct solution or outcome; creative thinking may get to the outcome first and then go back and reconstruct the steps, or creative thinking may make six wrong steps and only one, yet the necessary one, right step. In critical thinking, one tends to exclude what is irrelevant, off the track, distracting; in creative thinking, nothing is irrelevant while the answer is still being sought. In critical thinking, categories, classifications, labels tend to be fixed and rigid; in creative thinking, they are not. Critical thinking follows most likely paths; creative thinking does not. In critical thinking, you are usually sure that if you do everything correctly you will get the answer; in creative thinking, there is no such guarantee.

Clearly there are some very fundamental differences between critical thinking and creative thinking. It is not a question of one being better than the other. Each is useful in the appropriate circumstances, and each is sometimes necessary. So no need exists to choose between them, to develop one and sacrifice the other. Nor does any need exist to say some students can do one, but not the other. All have the capacity for both kinds of learning. Both can be learned; both can be taught. But since they are so different, they require different ideas, different approaches, different procedures. This handbook is devoted to the development of critical thinking. This in no way plays down creative thinking. It merely leaves creative thinking aside for the time being.

Part II

IMPROVEMENT OF TEACHERS' CRITICAL SKILLS

This part of the handbook will be devoted specifically to discussion of particular reasoning skills. A host of individual features could be listed here. Several of the more prominent ones includes deduction, assumptions, use of language, fallacies, tracing out implications and consequences, use of evidence. These categories are not mutually exclusive, or in any way definitive. There is some overlap. The difference from category to category is sometimes merely a matter of emphasis.

In this part, discussion will be designed to help the teacher improve her or his own abilities in each of these areas. Discussion of "what can we do with it?" will be reserved for the following part. Some of these skills are more frequently used than others, and some have more ready application than others. Please do not be dismayed by this. Not every single thing one learns as a teacher must find direct, concrete, immediate application in the classroom to be of value. Anything and everything learned which helps the teacher become more proficient in critical thinking and reasoning has to make the teacher a more valuable resource to students.

Finally, several excellent texts cover essentially the same aspects discussed here. Thus, this paper will not go into minute detail on every point. It will try to provide enough discussion to enable the teacher to carry on without the need to consult another source. But, if anyone wishes more detail than this on any particular point, the bibliography can guide the searcher to appropriate sources.

Deduction

Deduction, as used here, embraces the same essential meaning as reasoning, making an inference or giving an argument. Deduction, at this point, does not distinguish deductive from inductive argument. Deduction applies to all arguments. For present purposes, deduction is the process of reasoning, the act of deducing.

Exposition vs. Argument: In any attempt to learn how to distinguish good arguments from bad arguments, the first task is to determine whether or not an argument is being made. Not every written or spoken passage will be an argument, or even contain an argument. Much of what people read or hear is merely description, the accounting of facts, the providing of information, or the like. Only in some cases will there be the attempt to use some statements to "back up" or support other statements. Only in these cases is an argument being made. An argument is nothing more than a group of statements which have a special relationship to each other, some of the statements, premises, give support to (back up, provide evidence for, give us reason to believe) one of the other statements, the conclusion. Thus the premises are given as reasons why one should accept the conclusion as true.

The form an argument takes is as follows:

statement 1 ┐
statement 2 ├ premises
statement 3 ┘
statement 4 — conclusion

Here is an example:

Rosemarie always goes out after class on Tuesday night.
Eleanor always accompanies Rosemarie. — premises
Today is Tuesday.
Eleanor is going out tonight. — conclusion

Frequently, the presence of an argument is indicated by the manner in which the statements are presented. For example, suppose someone said "Eleanor is going out tonight because Rosemarie always goes out after class on Tuesday night, Eleanor always accompanies Rosemarie, and today is Tuesday." This would clearly be an argument, for there is clearly the attempt to offer the last three statements as reasons to support the first. The word "because" helps to indicate this relationship. For this reason "because" is called a logical indicator. It indicates the logical

relationship between statements. Other words would serve just as well. They all have in common the feature that the statement which follows them is usually a reason. Beardsley has distinguished the following logical indicators:

because...
for...
since ...
for the reason that...
in view of the fact that...
on the correct supposition that...
assuming, as we may, that...
may be inferred from the fact that...
may be deduced from...
as shown by...
as indicated by...
as is substantiated by...

Now notice that the argument would remain unchanged, if the statement were "Rosemarie always goes out after class on Tuesday night, Eleanor always accompanies Rosemarie and today is Tuesday, therefore Eleanor is going out tonight." The logical relationship between the statements is unaffected by the order of presentation. Thus we have exactly the same argument as before. Again, the presence of an argument is indicated by the word "therefore." Again, there are others which would serve equally well. Each of these words or phrases usually shows that a conclusion follows:

therefore...	indicates that...
hence...	consequently...
thus...	allows us to conclude that...
so...	we may deduce that...
implies that...	points to the conclusion that...
entails that...	suggests very strongly that...
which shows that...	leads me to believe that...
proves that...	bears out my point that...
	from which it follows that...

The presence of a logical indicator unfailingly indicates the presence of an argument. But the presence of a particular word does not always mean that it is being used as a logical indicator. For example, "since" is sometimes used to indicate not a logical relationship between statements but the passage of time.

Sometimes the logical indicator will be completely omitted from an argument. The argument still remains a legitimate argument. The argument just no longer offers the aid of a logical indicator

in detecting its presence. In those cases, the reader must simply decide whether it is an argument or not by looking at the content of the statements themselves and the context of the entire passage. It is sometimes difficult to obtain a clear decision in such cases.

If, in a given passage, there is no argument at all, then it is an exposition.

Exercises: Exposition vs. Argument

In the following exercises, please (a) determine whether the passage illustrates argument or exposition; (b) if the passage offers an argument, identify the conclusion and the premises; (c) identify the logical indicators, if any:

1. The reservoir of psychic energy is the id. The energy of the id is used to gratify the basic life and death instincts. By means of the mechanism of identification, energy is withdrawn from the reservoir and is used to activate the ego and the superego.

2. Biological, sociological/cultural, and experiential factors do not act in isolation. Three classes of factors are always acting on effects of behavior. Behavior is modified by and modifies three classes of behavior.

3. Nor will you have escaped worrying over this problem - those of you who are men; to those of you who are women this will not apply--you are yourselves the problem.

4. According to a news report, the Kent State verdict offers one more illustration of the system's refusal to address the most legitimate grievances of its citizenry. Those who still believe that it is possible to attain fundamental justice from the agencies of a corrupt and decadent power structure have one more tragic example of the uselessness of such misguided faith. Moreover, it is now abundantly clear that white middle-class youngsters are as vulnerable to the system's excesses as are blacks, Indians, Chicanos, Puerto Ricans, and poor whites.

5. Politically, then, binding arbitration is in serious trouble from the start this year. Both the committee and the union seriously question the commission's authority. The committee has said that they will participate but will simultaneously appeal the process as well as any results. And teachers, due to the legal question and their experience with the committee in the past, refused even to participate.

6. Bail reform advocates remind us that the question of bail policy does not only touch on depriving unconvicted defendants of their freedom, they cite studies that indicate a high correlation between pre-trial detention and eventual conviction. Studies also indicate that detained defendants receive prison sentences in more instances than those who were released. These studies pose a challenge to the equal protection provisions of the Constitution, suggesting as they do that not all defendants have equal standing before the law.

7. Among the most critically essential molecules for life are the proteins, chains of amino acids, fastened together. Amino acids are peculiar in that one part of the molecule (carboxyl group) can behave as an acid and another part (amino group) as a base.

8. Died: Constantinos A. Poxiadis, 62, Greek-based city planner; of amyotropic lateral sclerosis in Athens, June 28. Poxiadis designed scores of urban building and renewal projects around the world, applying his concept of "ekistics" which relates architecture to sociology, economics, and other appropriate disciplines.

9. In her exceedingly valuable book, attempting to effect a reconciliation between Oriental and Occidental psychologies, Alice Bailey writes, "The key-word 'substance' with its suggestion of materiality is a misnomer. It is helpful, however, to reduce this word to its Latin roots: 'sub' under, and 'stance' to stand. So substance is that which stands underneath, or underlies."

10. A vector is a mathematical object with both numerical and geometrical properties. The physicist has been able to make good use of it in his description of nature. In this chapter, we will be concerned with vector algebra and some vector calculus. The vector properties discussed here will find application throughout the rest of this text.

11. What we now understand about the interactions and transformations of particles comes in large part through certain conservation laws that govern elementary-particle behavior. In this large-scale world as well, conservation laws are the source of our deepest insights into the simple regularity of nature.

12. It must not be forgotten that the author who wishes to be understood is obligated to carry all his ideas to their utmost theoretical conclusions, and often to the verge of what is false or impracticable; for if it be necessary sometimes to depart in action from the rules of logic, such is not the case in discourse, and a man finds it almost as difficult to be inconsistent in his language as to be consistent in his conduct.

13. With all other social services being reduced, cutbacks here can't be avoided. Our social philosophy has simply outpaced our fiscal ability.

14. Since overweight people seldom feel real bodily hunger, they seldom are satisfied by what they eat.

15. Welfare costs have more than tripled in ten years, from $4 billion in 1965 to $18 billion in 1974. The primary cause of this cost explosion is rising unemployment. As the government moves to "recess" the economy, and as American multinational corporations move plants abroad to lower-wage, higher profit countries, millions of workers are driven out of work onto welfare.

16. If we recognize the problems that plague us in our dreams, we can take waking action to solve or eliminate them, which will, in turn, reduce our tensions. Put simply, we can learn to understand ourselves better and to make our lives and the lives of those close to us more pleasant by using dream interpretation as life interpretation, another means to understanding what motivates us.

17. The statement that the U.S. Army is still testing hallucinogenic drugs and alchohol "but only with animals," (Aug. 4) reveals a callous attitude. Without animals, most of mankind would perish. Using them for experimental purposes is immoral, unethical, and a shameful blot on the uncivilized world of today.

18. Bulgakov's play, "Zoya's Apartment," is anti-Soviet in tenor. It tries to demonstrate the chaotic situation which Lenin's New Economic Policy created. Some bureaucrats are depicted as bungling and incompetent. Others are apparently able, but lack human sympathies. Ordinary people must break the law in order to survive in this atmosphere. They are ultimately forced to resort to bribery, drug-peddling, and prostitution.

19. Tone's Cereal 91 wants you to know the facts about nutrients in cereals, so you won't be confused. Most cereals are making vitamin and iron claims these days, but only two cereals -- Cereal 91 and one other -- give you 100% of the U.S. RECOMMENDED DAILY ALLOWANCES FOR 10 ESSENTIAL VITAMINS AND IRON. And, ONLY Cereal 91 has a 100% level of these important nutrients PLUS all that GREAT TONE'S TASTE. You get MORE from Tone's Cereal 91, and that's a fact.

20. This new agreement between Israel and Egypt will not bring any long-lasting peace to the Middle East. Before there can be any long-lasting peace there, the two most crucial problems, the Palestinian refugees and the Golan Heights, must be solved. And Egypt is not significantly involved with either.

21. The African Ibo tribe is essentially different than us because their society does not employ a written set of rules.

Deductive vs. Inductive: From here on, this handbook will consider only arguments. All arguments can be divided into two basic kinds: deductive and inductive. Every argument has a conclusion and premises to support that conclusion. The nature of the distinction between deductive and inductive arguments involves the strength of the support which the premises provide to the conclusion. Sometimes the premises provide greater support than other times. In the event that the premises provide conclusive support to the conclusion, we have a deductive argument. In a deductive argument, the premises not only provide support for the conclusion, they conclusively establish the conclusion as true; they prove the

conclusion to be true beyond a shadow of doubt. In other words, on the basis of these premises, the conclusion cannot fail to be true (assuming the premises themselves are true.)

If, on the other hand, the support provided by the premises is anything less than conclusive, less than total, then the argument is an inductive argument. This is still a legitimate kind of argument. The premises still provide support for the conclusion. The only difference is that here the support is less than total. The premises give some reason for accepting or believing the conclusion, but not conclusive reason. The greater the support provided by the premises the more probable is the conclusion. But that probability never reaches 100%. Thus even with all true premises in a perfectly legitimate inductive argument, the conclusion still might not be true.

Deductive and inductive arguments are frequently distinguished in the following way: deductive arguments always move from general premises to particular conclusions, and inductive arguments always move from particular premises to general conclusions. Thus, for example, the following offers an example of an inductive argument:

Raven #1 is black
Raven #2 is black
Raven #3 is black
.....
.....
Raven #99 is black
All Ravens are black

The premises are all particular statements (i.e., about particular ravens) while the conclusion is a general statement (i.e., about all ravens). But the conclusion could just as easily have been "Raven #100 is black." This is still a legitimate inductive argument, even though the conclusion is not a general statement. Thus, this common way of distinguishing deductive from inductive arguments, strictly speaking, is incorrect. But most of the time, deductive arguments do move from general to particular statements, and inductive arguments do move from particular to general statements. So, practically speaking, it is permissible to use this shorthand method for distinguishing as long as one remembers the correct basis for the distinction.

Exercises: Inductive vs. Deductive Arguments

In each of the following exercises, determine whether the argument is deductive or inductive:

1. A "gloom and doom" view holds that we should hesitate to predict what the world will look like in 1984. However, if the present jackals and gorillas who are running affairs are still at the helm, I expect the worst. We have to bear constantly in mind that all that has been accomplished by man in the period called "history" can be wiped out in the wink of an eye any day, any minute. What can one hope for under such conditions? The present breed of man--Homo Sapiens--is finished.

2. Administration officials in Washington are in a quandary over what they can do about strong indications that the Soviet Union may be violating the ban on biological weapons by building new facilities for their manufacture and storage. A treaty prohibiting the development, production, and stockpiling of biological weapons went into effect last March, and the Soviet Union formally declared in June that it "does not possess any" such weapons. But sources say there is evidence that within recent months, the Soviet Union has been constructing or expanding facilities which appear to be biological arms production plants, having very high incinerator stocks and large cold storage bunkers that could be used for stockpiling the weapons.

3. Why do physicists believe that the short-lived unstable particles are fully as important and interesting as the few stable particles that compose our world? In the first place, the unstable particles may have a vitally important effect on the properties of the stable particles. The second, and perhaps deeper reason, is that it appears to be entirely a matter of chance which particles are stable and which are unstable.

4. Washington was a general, so he must have been in the Army.

5. President Ford won't leave the White House. It must be because of the attempts on his life.

6. There was nuclear testing in the late 50's and early 60's. There is a 13-to 15-year latent period for effects. There has been a dramatic rise in lung cancer. Therefore, the testing may be responsible for the epidemic.

7. If capital punishment deterred crime, then there would be some justification for it. But it clearly does not deter crime. Just look at the statistics. Thus, there is no justification for capital punishment.

8. Our 17-year-old daughter is pretty, but it seems she's always trying to disguise this fact as if she were ashamed of it.

44

9. Any teacher caught hitting a student ought to be fired. And if any teacher is fired for such an offense, he should be arrested. And anyone who is arrested ought to go to jail. Hence, we should send to jail any teacher who is caught hitting a student.

10. So far, all reasonably intelligent teachers have been able to master the skills of critical thinking and reasoning. So all those who read this handbook and who are reasonably intelligent will master the skills of critical thinking and reasoning discussed here.

11. All good things must come to an end. This is a good thing. So this must come to an end.

Valid Inference: Conditional Argument: Deductive arguments can be subdivided into two kinds - valid and invalid. A valid argument is one such that if the premises are true, the conclusion must be true; or such that given the premises, the conclusion follows with necessity; or such that it is impossible for the premises to be true and the conclusion to be false.

Though all deductive arguments attempt to establish the conclusion with necessity, on the basis of the premises, some fail to do so. These are called invalid deductive arguments. In the previous section, the definition given there for deductive arguments was really the definition for valid deductive arguments. Since only a deductive argument can be valid, the notions of validity and invalidity refer only to deductive arguments. Hence, this handbook, from now on, speaks merely of valid arguments and invalid arguments with the understanding that they are deductive.

The notion of validity concerns what might be called "intrinsic" properties of an argument. It tells us how the pieces of an argument (i.e., the premises and conclusion) fit together, nothing more. If an argument is seen as a chain of reasoning, validity indicates whether all the links of the chain are present. It indicates whether one can get from the starting point (the premises) to the end point (the conclusion). It tells nothing about the strength of each link (i.e., the truth of each premise). Nor does it tell us anything about the "usefulness" of the chain (i.e., whether the argument is "good for anything"). Validity relates only to whether or not there is a full chain, with all the links in place. Thus, it is possible to have a perfectly valid argument in which all the premises are false; also one in which both premises and conclusion are false; also one in which premises

are false and conclusion is true; also one in which both premises and conclusion are completely nonsensical. There is only one situation which is categorically ruled out for a valid argument: true premises and false conclusion.

So it can be seen that the criterion of validity only assesses the quality of the reasoning that takes place within an argument, nothing more. Validity furnishes a standard by which to rule out "bad" instances of reasoning. But, though this feature of an argument is a necessary one, it is not sufficient to command our belief or assent. This is because, quite simply, the mere validity of an argument offers no guarantee for the truth of the conclusion. But the reasoner can obtain such a guarantee if he knows not only that the argument is valid, but that in addition, all the premises are true, for then the meaning of validity guarantees that the conclusion must be true. This is called a sound argument: one which is valid and has all true premises. All other arguments are unsound.

Thus, those arguments considered to be totally persuasive are sound arguments. How does one know which arguments are the sound ones? Well, it is easy to determine which are valid (the others must be rejected out-of-hand.) But it is not so easy to determine which of these have all true premises. Depending upon the nature of the premise itself (i.e., depending upon what kind of statement the premise is, and what the statement is about), it can be extremely difficult to determine its truth or falsity. This is especially the case when the "subject matter" of the premise is one of great controversy. Hence, in practice, it is not always possible to make a final determination regarding the truth of a premise, and thus the soundness of an argument. Determining the truth of a given premise can involve any one of the following: prior knowledge, additional information, feelings, principles, values, beliefs, etc. Thus this determination, though crucially important, will remain outside the scope of this book.

One can make a valid argument or inference in many different forms. Only two types will be examined here, conditional arguments and syllogistic arguments (or syllogisms). Both are very common forms of arguments. Facility with these two basic forms will stand the reasoner in good stead. For each of these two argument forms, discussion will focus first on the nature of the argument form itself and then on the development of a technique for determining the validity of such an argument.

Valid Inference: Conditional Arguments: Suppose two statements A and B are made. For example:

A. It is raining.
B. I will not go outside.

These two statements can be combined to form what is termed a conditional statement: If A then B. Then the example would read: If it is raining, then I will not go outside. Such a conditional statement can be made from any two statements. It is easily seen why such a compound statement is called "conditional." Clearly, the truth of one of the statements is in some way or other dependent upon or conditional upon the truth of the other. Expressed in different words: the situation or state of affairs described in one statement is conditional upon that described in the other.

Care is required to understand just what such a conditional statement says, and what it does not say. It says that if A is the case (or A is true) then B is the case (or B is true). But it does not tell us anything about B if A is not true. However, it does tell us that if B is not true, then A is not true. But again it tells us nothing about A if B is true. These relationships can be formally expressed by means of four argument forms which attempt to conclude something about one statement on the basis of what is known about the other statement. (That is assuming all along that the two statements are related in the way indicated by the conditional "if A then B.") Thus the possible forms can be summarized:

VALID		INVALID	
I. if A then B A therefore B	II. if A then B not B not A	III. if A then B not A not B	IV. if A then B B A

The first two argument forms are valid. They have been given the names: I modus ponens; II modus tollens.

The second two argument forms are invalid. (In fact, no conclusion whatever can be drawn in the latter two cases.) Forms III and IV are fallacious (erroneous) and have been given the names of: III Fallacy of denying the antecedant; IV Fallacy of affirming the consequent.

In a conditional argument, the first statement, A, is the antecedant; the second, B, is the consequent.

These are called argument forms because the validity or invalidity of the argument depends upon the form of the argument (i.e., its structure), not upon its content. Hence one could

substitute any statements whatever for A and B, and as long as the argument relates the two statements in the way indicated, that argument will always be valid if it has form I or II, or invalid if it has form III or IV. Thus we have a technique for determining validity of any conditional argument regardless of its content.

You will notice that no attempt has been made to prove that the argument forms I and II are valid, and forms III and IV invalid. This paper only states that they are so. It can be proven. But such a proof would involve digression not necessary here. The interested reader can consult the references provided. Instead this paper suggests three examples which, though they still will not prove anything, will show that "it makes sense" - at least in those three cases.

Ex. 1) A: I am presently in Cambridge, Mass.
B: I am presently in the U. S.

2) A: We have an apple pie.
B: We have (or had) apples.

3) A: It is raining.
B: It is cloudy.

This last example will only work (i.e., "make sense") if "normal" rain conditions are involved. This restriction must be imposed, otherwise the first premise (if A then B) would not be true--and the whole notion of validity assumes the premises are true.

For each of the above examples substitute A and B as given into each of the four argument forms. Then see if the result "makes sense" or "sounds right." Again, such exercises do not prove anything. They only attempt to make the reader "feel better" about the whole process. However, if any teacher wishes and requires more proof, these can be obtained from the texts indicated.

Let us work out an example from beginning to end. Consider the following argument:

> If we do get any more snow tomorrow, then we certainly will not go bowling. But I just heard the weather forecast, so we're all set.

One of the things you will begin to notice is that arguments found in everyday conversation are not always expressed in simple, straightforward form. Frequently, we use elliptical or idiomatic expressions. Usually we understand what is meant. Let us rewrite the above argument to express more clearly just what is being asserted.

If we do get any more snow tomorrow, then we certainly will not go bowling. But we will not get any more snow tomorrow (based on the weather forecast), so we will go bowling.

Now the argument is in a form in which we can see exactly what the component statements are. The conditional statement (i.e., the if__ then__ statement) always determines which statement is A and which is B. Thus, it is always advisable to isolate the conditional statement first. In this case, it is the first statement. We have:

If we do get any more snow tomorrow (A) then we certainly will not go bowling. (B)

Then we have:

But we will not get any more snow tomorrow.
not A

Notice that this statement is labelled "not A" since it is the contradiction or negation of the statement labeled "A."

For the conclusion we have:

so we will go bowling.
not B

Thus the form of this argument--as determined by the relationship between the component statements--is

if A then B
not A
---
not B

This form is invalid (denying the antecedent), and thus so is any argument which has this form. Hence our original argument is invalid. Commonsensically, we can understand this verdict in this way: even if it does not snow tomorrow, that is no guarantee that we will go bowling. For example, someone may become ill.

All conditional arguments are handled in exactly the same way as above.

Step 1. Find the conditional statement.

Step 2. Isolate the two component statements in the conditional statement and label the antecedent A and the consequent B.

Step 3. Isolate the other two statements which are part of the argument: one is the second premise, one is the conclusion. (Please keep in mind that sometimes not every statement in a passage is part of the argument.) These two statements can then be labelled in accord with the labels given in step 2. They will be one of the following: A, B, not A, not B.

Step 4. With all the statements properly labelled, simply compare the form of the argument to the standard forms on p. 35.

Exercises: Conditional Arguments

In each of the following exercises, determine if the argument is valid or invalid by determining which of the four forms is being used. In each example, try to "guess" at the validity before resorting to the argument forms.

1. We now can finally put to rest all the speculation about how Bobby Kennedy was killed. It is clear now that he was shot with just one gun, for the special team of experts appointed by the court would have found evidence of a second gun if there had been one. And, yesterday, they reported unanimously that there was no such evidence.

2. There are those who say that the President must continue these dangerous hand-shaking forays into cheering crowds. They say that unless the President keeps in touch with "the people" he will not know what really is the view of the American citizen. But since merely shaking hands amidst a throng of people, policemen, secret servicemen, police barriers, etc. does not tell the President anything about the views of the American citizen, this practice should be stopped immediately.

3. If the President had not extended the tax cut, then the effect would be the same as a tax increase next year. And given the state of most everybody's pocketbook these days, it would be political suicide to get tagged with a tax increase in an election year. Everybody knows that Gerald Ford wants to remain President, so it is obvious why he extended the tax cut.

4. Either this country must live up to its professional principles or it must forever remain a two-faced hypocrite. And if it wishes to avoid the charge of hypocrisy, it must denounce those practices which are totally inconsistent with its professed principles. Hence we should denounce in the strongest possible terms the recent acts of Franco's dictorial regime, since these acts are clearly in flagrant opposition to our constitutional practices.

5. Some have said that if we go ahead with plans to sell liquor on Sundays here in New Hampshire, it means that there is clearly no longer any respect for the sabbath. But we all know that "respect for the sabbath" went out long ago. So we will soon be selling liquor on Sundays.

6. Kissinger said that the Egyptian-Israeli pact would have to be renegotiated if Congress refuses to go along with the American commitment to place 200 civilian observers along the cease fire lines. But he is confident he will get congressional approval for the civilian observer. Thus, the pact will not have to be re-negotiated.

7. One cannot be an outstanding teacher without a thorough knowledge of the subject matter, but to possess a thorough knowledge of the subject matter is no guarantee that one possesses the ability to communicate this subject matter to a student. And it is this ability, by no means easy to acquire, that is the sine qua non of good teaching.

8. President Ford thinks the American people have a right to see him and shake his hand. Don't we also have the right not to go through another presidential assassination? It is unlikely we will have another presidential assassination. Therefore the President should see the people and shake their hands.

9. If President Ford expects to be elected President, then I suggest he put a muzzle on his wife. Mr. Ford will not get the nomination for President, thus Mrs. Ford can continue to speak courageously.

10. If the junior high teachers persist in including a section on "Death and Dying" in the study unit, there will be trouble from the board of education. And since every member of the board showed up here today, we can pretty safely conclude that the teachers stood their ground and kept that unit in.

11. If the candidates are too similar on issues--take the Timilty vs. White race, for instance--then the candidates stand on top of each other and may not reach many of the people more to the left or the right of them.

12. Population pressures are changing the way people can hike, camp, and sightsee in the most popular national parks. However, the Park Service says that the increasing restrictions are essential if the superlative attractions everyone comes to see are going to be kept.

13. In order to feel alive, we must be conscious. In order to be conscious we need something to be conscious of, (polarizing the consciousness to something other than itself). Therefore, feeling alive constitutes polarizing the consciousness to something else.

14. If trustbuster Ford will not beef up the Antitrust Division or bust up the oil grants, then the least he can do for free enterprise is to get the government out of the business of regulating business. So Mr. Ford decided to go to work on the bureaucrats who regulate the airline business.

15. There will be no real end to the fighting in Beirut until the "haves" (mostly Christian) begin to share wealth and political power with the "have-nots" (mostly Moslem). But so far this has not happened. The wealth has either been hoarded or taken out with the wealthy when they left. So it is not surprising that the fighting continues.

16. If, in every human contact, something is communicated, something learned, and something felt, it follows that where nothing is communicated, learned, or felt, there is nothing human either.

17. In concluding a report on staff morale, an official indicated that morale was low; from the observations and from the interview with the Assistant President, the reader will already have formed some opinion of their general indifference and callousness. The data given in the report are intended to give insight into the poor self-conception of the staff, for it is important to restate the idea that unless a person feels degraded himself he will not be able to degrade others. It does not follow, of course, that all degraded people will try to degrade others; I suggest rather that a person with strong self-respect has no need to degrade his fellows.

18. If it is true that the value to a culture of an idea or feeling can be measured by how long it lives in a dying body, it follows that, since the capacity to love, to hate, and to hurt seem to last as long as alertness itself, the culture must set great store by them.

Valid Inference: Syllogisms: The second kind of deduction is the syllogism. Here, as before, the validity or invalidity of a syllogistic argument will depend upon its form, not its content. As an argument form a syllogism works by relating different kinds of things (classes of objects) to each other. There are always exactly 3 classes of things mentioned in a syllogism - no more, no less. There are always 2 premises, 1 conclusion. In the premises, all the classes of objects (called terms) appear. One class (called the middle term) appears twice. The other two (called end terms) appear once each. The conclusion contains only the two end terms; the middle term drops out. Suppose we had two end terms, A and C, with the middle term being B. A syllogism works essentially this way: one premise relates A to B, the other premise relates C to B. Thus the "middle" term B serves as a sort of "bridge" between A and C. Thus, the conclusion states the relationship between A and C--which was determined by "going through" B.

Each of the statements in a syllogism will express a relationship between one class of things and another--or more precisely, between the members of one class and the members of another class. There are three kinds of relationships which appear in a syllogism:

All A are B	all the members of class A are also members of (i.e., in) class B
Some A are B	some of the objects in class A are in class B
No A are B	there are no members in common

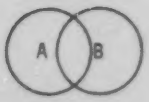
Thus the following would be a syllogistic argument, usually called a syllogism:

All A are B
Some B are C
Some A are C

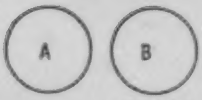
Here, the letters A, B, and C represent classes of objects, not statements. To test for validity of syllogisms, rules can be applied. The presentation here will employ a graphic (or pictorial) method for determining validity which uses circles to diagram each of the following kinds of statements in the indicated way:

All A are B

Some A are B



No A are B



Thus, whenever any of the above syllogistic relationships are stated, readers will graphically represent the relationship between the classes in the manner indicated. The procedure for testing validity can be summarized in the following three steps:

1) Draw circles for first premise;

2) Draw circles for second premise (Sometimes there is more than one way to do this. This will be discussed at length below.);

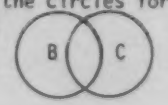
3) Do not draw circles for the conclusion. Instead, see if the relationship (between the classes) indicated in the conclusion turns out to be true in the diagram of circles. If so, argument is valid. If not, the argument is invalid.

Consider the argument given above:

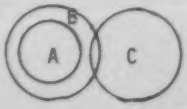
All A are B
Some B are C
Some A are C

step 1: draw circles for 1st premise:
All A are B

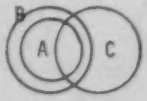
step 2: draw circles for 2nd premise: Some B are C. According to the basic diagrams, the circles for B and C should "overlap" like this:



But since the circle for B is already in the diagram, all the reader need do is draw the circle for C in such a way that the two overlap. This yields:



B and C do overlap. Thus the diagram satisfies the relationship expressed in premise 2. There is another way in which C could overlap B, for example, the following:



Notice that it is still true here that B and C overlap. Thus, the diagram still satisfies premise 2, which is what the test is supposed to do in step 2. But the difference, of course, is the relationship between C and A: in the first case C did not touch A at all; here it overlaps A. But before the readers decide what all this means, there is yet a third way in which C could be drawn:

This is an example, obviously, in which it is possible to draw the 2nd premise in more than one way. This means that given the two premises which we have, with end terms A and C, it is possible for A and C to have any one of three different relationships to each other. The question of validity then is simply this: does that relationship (between A and C) expressed in the conclusion follow with necessity from the two premises? If that relationship does follow with necessity, then it should occur in all 3 situations. Proceed to check all 3 (in accord with step 3 of the procedure).

step 3: The conclusion says, Some A are C. This means that at least some of the members of A must be in C. See if this is indeed the case in each of the 3 alternatives. Examine the second alternative first. It is perfectly

clear in this case that A and C overlap. Some A are in C. Thus, the conclusion checks out. Now examine the third alternative. In this case, A is completely enclosed by C; i.e., all the members of A are in C. But this does not show that the conclusion fails to check out. All the conclusion requires is that at least some of the A are in C. It does not specify, one way or another, whether, in fact, all the A are in C. It only states that some A are in C. And that is all the procedure requires in order for the conclusion to check out. And, of course, this is the case here, for it certainly is true that at least some of the A are in C. So, once again, the conclusion checks out. Finally, the first alternative must be examined. The conclusion requires that at least some of the A are in C. But in this case, no A whatsoever are in C. Thus, there is no way that the conclusion can be true in this case. And if the conclusion fails to be true in any case at all, then that means, of course, that the conclusion does not follow with necessity (i.e., in all cases) from those premises. That means, then, the argument is invalid.

In those cases in which several different diagrams apply to premise 2, the order in which they are examined (in step 3) is immaterial. Thus, if alternative 1 were examined first, then the diagram would have indicated right away that the argument was invalid. There thus would have been no need to examine the other cases. Hence, a practical strategy would be to try and show the argument invalid right away. ("Go straight for the jugular" is good advice to give to students.) If one does so, then one need go no further. If not, then the analysis must continue until all the diagrams have been checked. If they all check out, then the argument is valid.

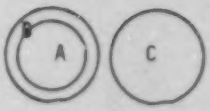
So, in the above instance, the reader could have checked just the first diagram and shown that the argument was invalid, and then stopped. But, by the same token, if the 3rd alternative had been checked first, the conclusion determined as true, and then the reader had concluded that the argument was valid, he would have been mistaken. In other words, if one finds that the conclusion is not true in one of the diagrams, one may stop at that point, for then the argument is invalid. But if the conclusion is true in one of the diagrams, this does not show that the argument is valid and one must continue checking until all the diagrams have been exhausted.

Consider another example:

All A are B
No B are C
Some A are C

step 1: diagram 1st premise

step 2: diagram 2nd premise
(Notice in this case there is only one possible way to draw the 2nd premise.)



step 3: See if conclusion is true. Conclusion says some of A is in C. From the diagram one sees that this is impossible, thus conclusion is not true in this case. Thus, the argument is invalid.

Another example:

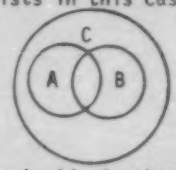
Some A are B
All B are C
Some A are C

step 1:

step 2:

58

2nd premise says all B are C. This means graphically that B must be completely inside C. But notice, another way to diagram premise 2 exists in this case.

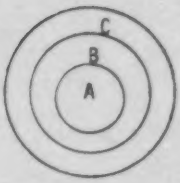


B is still completely inside C; thus premise 2 is satisfied. Again, the difference in the diagrams is the differing relationship that C has to A. In step 2, our objective is to graphically portray the relationship between B and C. But because A is already in the diagram, C will also have some relationship to A. The exact nature of the relationship of C to A will obviously depend upon how C is drawn relative to B, and how A is already drawn (in step 1) relative to B. In some cases, like this one, because of the way A is already diagrammed relative to B, A can have several different relationships to C. Thus, the circles graphically portray various relationships between A and C. And these graphical relationships between circles "mirror" the logical relationships between the class A and the class C--which is just what the conclusion is all about. For this reason, the graphic technique can clarify the logical relationship between the classes.

In the example, the conclusion is found to be true in both cases. Thus the argument is valid. Note again here that the conclusion states that some A are C and, in the second case, all the A are in C. But that is alright. For it is still true that some A are in C--even though in this particular case, all the A are in C. In other words, the conclusion did not say, "Some, but not all, A are in C." It only said "Some A are in C." A final example:

All A are B
All B are C
All A are C

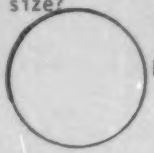
step 1:

step 2: 

This is the only way to draw premise 2.

step 3: Conclusion is seen to be true. Argument is valid. One word of caution. "All A are B" is represented by:

The relative sizes of the circles does not matter. Thus would it be permissible if A and B were drawn exactly the same size?

i.e., 

resulting in 2 identical circles on top of each other

Consider this question for a moment before reading the answer below.

The answer is no, it would not be correct to draw both circles the same size. The reason is this: if they are both the same size then the diagram shows not only that all A are B, it also shows, graphically, that all B are A. This is not the case in the first diagram. In that diagram, there are clearly some B which are outside A. Now, of course, it is possible that all B are A. One cannot tell from knowing only that all A are B. But it is precisely because we cannot tell that it would be erroneous to draw the diagram in the second way, for that diagram does indicate just that relationship to be true which we cannot know to be true without further information.

The same reasoning applies to the question of drawing "some A are B" such that A is completely inside B. In the absence of any further information, the reader must leave open the possibility that some A are not B. Graphically, that possibility would be ruled out by having A completely inside B.

In summary, if one draws the diagrams exactly the way they were indicated at the beginning of this section, one cannot go wrong.

The next step is simply to move to arguments which have not letters, but full statements. Consider the following syllogistic argument:

All grocers are merchants
No merchants are dishonest people
No dishonest people are grocers

All the reader need do is isolate the 3 classes involved in the argument. The classes can be identified as:

A grocers
B merchants
C dishonest people

then the argument becomes:
All A are B
No B are C
No C are A

Now, apply the technique already learned. By the way, which letters are used is clearly irrelevant. So students may wish to use letters that are closer to the class they represent. For example, the above argument could be summarized in the following form:

All G are M
No M are D
No D are G

Consider the following argument:

It is true that all killers are criminals, but it is also true that all soldiers are killers. It must be the case, therefore, that some criminals are not soldiers.

This becomes:
All killers are criminals
All soldiers are killers
Some criminals are not soldiers

This becomes:
All K are C
All S are K
Some C are not S

Again, at this point apply the technique to determine validity. A last example:

> All Japanese prints use strong colors, and some paintings that use strong colors are paintings done by Keith Jarrett, the famous Ming Dynasty artist. Therefore, some of Jarrett's paintings are Japanese prints.

This becomes:

All J are S	J-Japanese prints
Some S are K	K-prints done by Keith Jarrett
Some K are J	S-pieces that use strong colors.

Exercises: Syllogisms

In the following exercises: (a) Try to determine the validity of the argument just by "intuition" or "feel." Do this before you draw the diagrams. This is to help to train your "logical intuition" or "perceptivity" so that it becomes more and more accurate, and thus more and more dependable. (b) Determine validity by use of diagrams.

1. All midwives deliver babies
   All obstetricians deliver babies
   All midwives are obstetricians

2. No cancer can be cured
   All diseases can be cured
   All cancers are not diseases

3. All the witnesses hold stock in the firm
   Some stock holders in the firm are dishonest
   Some of the witnesses are dishonest

4. All aerosol cans are harmful
   Some aerosol cans are unnecessary
   Some harmful things are unnecessary

5. All speakers use gestures
   Every gesture is telltale
   Some speakers mislead their audience through the use of gestures

6. Dissidents are treated harshly in the Soviet Union. There are no exceptions made for great writers. This becomes, after we make explicit the second premise:

   All dissidents are treated harshly
   Some great writers are dissidents
   Some writers are treated harshly

7. Some slaves were freed by their masters
   All slaves were freed by the Emancipation Proclamation
   Some slaves were not freed by their masters

8. All the people can be fooled some of the time
   Some of the people can be fooled all the time
   All the people cannot be fooled all the time

9. All nurses must wear I.D.'s (to get into Mass. General Hospital)
   Some doctors wear I.D.'s (to get into Mass. General Hospital)
   Some nurses are doctors

10. Anytime the press is free, there will be active criticism of the government. You never get active criticism of the government without some of it being unfair and harmful. So you can't have a free press without some unfair and harmful criticism of the government.

11. Only the common people supported President Jackson. Most supporters of Jackson were from the West and South. Many common people live in the West and South.

    All Jackson's supporters were common people
    Some supporters were residents of the South and West
    Some common people were residents of the South and West

12. No one who opposed slavery supported the fugitive slave act
    Some Republicans supported the act
    Some Republicans were not opposed to slavery

13. Imagination is good for children
    All invisible dogs are using the imagination, therefore all invisible dogs are good for children.

14. Certain modest steps can and must be taken to combat the growing menace. These steps must concentrate on the foundation of the criminal justice system--the courts. No matter how many police patrol our streets, no matter

how many arrests are made, no matter how many jails are built, it is the courts alone that determine guilt or innocence and mete out punishment. It is there that we must concentrate our efforts. We must improve the administration of criminal justice if we are to make a dent in the soaring crime rate.

All issues of innocence or guilt are determined by courts
Our issue is an issue of innocence or guilt
Our issue should be determined by the courts

15. Some officers in the Portugese armed forces are not loyal
Some rebels are officers in the Portugese armed forces
Some rebels are not loyal

16. All physical things are real, and thus we see that ghosts are not real, for ghosts are not physical.

17. Only dogs are collies. Therefore, some animals are not collies, for all dogs are animals.

18. Barbara is a Buddhist, for Barbara seeks nirvana, and all Buddhists seek nirvana.

19. No nuclear-powered submarines are commercial vessels, so no warships are commercial vessels, since all nuclear-powered submarines are warships.

20. No stubborn individuals who never admit a mistake are good teachers, so since some well-informed people are stubborn individuals who never admit a mistake, some good teachers are not well-informed people.

21. All stereo sets are expensive and delicate devices, consequently no stereo sets are suitable toys for children, because no expensive and delicate devices are suitable toys for children.

22. Some conservatives are not advocates of high tariff rates, because all advocates of high tariff rates are Republican, and some Republicans are not conservative.

23. All fireproof buildings are structures that can be insured at special rates, so some structures that can be insured at special rates are not wooden houses, since no wooden houses are fireproof buildings.

24. Not all citizens are voters, for many citizens are illiterate, and to vote one must be able to read and write.

25. All popular girls are good conversationalists, and all popular girls are good dancers, therefore, some good conversationalists are good dancers.

26. All birds are snakes. No bird is left-handed. Therefore, nothing that is left-handed is a snake.

27. Some dogs are seals. Some seals bark. Therefore, some dogs bark.

28. No hummingbirds fly. Some tractors fly. Therefore, some tractors are not hummingbirds.

29. All dogs are ink bottles. Some ink bottles are squirrels. Therefore, some squirrels are dogs.

Assumptions

The feature of critical thinking and reasoning to be learned here can be very simply stated: frequently, arguments will be presented in "partial" form; i.e., part of the argument (one or more premises) will be missing. Teachers need the ability both to (1) realize that a premise is missing, and (2) articulate exactly what that missing premise is. Thus, strictly speaking, exercises for this section could be stated as simply the following: by supplying the missing statement, try to make the following elliptical (partial) argument into a valid argument. This sounds very cut-and-dried, and very unexciting. But the import is monumental. A few words about this feature may indicate why supplying the missing link is so essential.

To supply the missing premise which will make the elliptical argument valid (in other words, to supply the "missing link" in the chain) is in effect to take a given argument and supply whatever else it needs in order to become a "good" (i.e., valid) argument. That is, here is a line of reasoning which, if it is to be persuasive, must be supplemented by one or more additions. Thus, if this particular line of reasoning is to be accepted, one must also accept, as given, the missing premise which is required to make that line of thought convincing. Thus, accepting the argument really commits the person also to accepting the missing premise.

But does one, in fact, accept the missing premise? Well, obviously it is impossible to answer that question until the missing premise is known. For only then can assessment be made of the premise itself, can the premise be weighed for relevance, judged for reasonableness, tested for accuracy. Only then can the persons analyzing the argument decide to accept or reject it and hence, to accept or reject the entire line of thought which depends upon it.

Frequently, a speaker or writer will tacitly assume certain ideas or positions as part of an argument without announcing this assumption to the listener or reader. The assumption may tacitly include ideas or positions which are absolutely necessary for the argument to be persuasive. Many reasons exist for this. Sometimes the speaker himself does not realize that he has made such an assumption, or that such an assumption must necessarily be made, given the line of thought he proposed. This can arise obviously from mere ignorance or inattention, and need be no great cause for concern. Other times, it will happen because the speaker, though he realizes he is making such an assumption, takes it for granted that all his listeners accept this premise. He chooses not to belabor the obvious. Though this assumption is sometimes a rash

judgment to make, the assumption may still remain basically innocuous. At other times, the speaker deliberately suppresses an assumption because he does not want the attention of his listeners explicitly drawn to it. There obviously can be many reasons why one would not want to get "bogged down" on one particular idea or assumption. However, some of those reasons can be very sinister. This is where the reader or listener must be especially alert.

There is one last way in which tacit assumptions may arise. Sometimes a particular assumption is so general, basic, fundamental, wide-spread, pervasive that even though practically everyone accepts the assumption, it has become so much a part of their total outlook or world-view that hardly anyone is aware of the presence of the assumption anymore. This is the case with many of the basic tenets of our society and our culture. Some notions are so deeply ingrained that people are essentially oblivious to them now. Nevertheless, much of the way the majority think about cultural and social ideas and issues is affected by such assumptions. In particular, frequently when reasoning from one point to another, or attempting to draw certain inferences on the basis of something else, one does so with the help of premises and assumptions which are not explicitly taken into account at that time, but these premises and assumptions are, nonetheless, present and operative. For example, suppose (as one of the exercises stated) Professor Foster is observed at a restaurant with one of his students. If one attempts to make certain inferences concerning this, in some cases one will do so by assuming certain things about the propriety of a professor dating a student (assuming it was a date), the propriety of a married person being out with someone else, etc. The exact nature of the conclusion drawn or inference made will determine which ones of such assumptions are being appealed to. The point here is that (1) such assumptions can be so "all-pervasive" that one may "forget" that appeal is being made to them, and (2) one can never determine whether one wishes to assent or dissent from such a widely-held cultural norm (assumption) unless she or he sees explicitly and consciously what that norm is. (See, for example, exercises 23 and 31 below.)

A quick story may help to make the point. Ernest Hemingway was once interviewed by a reporter who wanted to know what quality it was that made a great writer. He asked Hemingway, "Is it this?" Hemingway said "No." "Well, is it that?" "No," replied Hemingway. Finally, after trying everything he could think of, the reporter asked in desperation, "Is there anything that makes a great writer?" After some thought Hemingway replied, "Yes, a great writer must have a built-in shockproof crap-detector."

This comment of Hemingway's is directly related to the point made above. Teachers and students must become sensitive to (i.e., be able to detect) the cultural norms that literally surround them. Teachers and students must be able to detect and articulate those cultural assumptions. When they do so, it will not necessarily mean that everything they detect will be labeled "rotten" and thrown out. Much of what they detect will be assessed, evaluated, and wholeheartedly approved. But unless such acceptance or rejection is done by the individual himself, it will never be an authentic act of that individual. The acceptance or rejection will remain forever merely the imprintation of certain views, beliefs, values by others (namely, the rest of the society) upon that individual. This kind of conscious, free discernment and consequent acceptance or rejection by the individual is of paramount importance in the development of a sound, healthy, morally responsible person. And, for this reason, this feature of critical thinking and reasoning, to whatever degree it contributes to this objective, is vitally important.

By the way, there are also all those instances of everyday living in which individuals simply "take things for granted." And most of the time these are not ideas or positions of earth-shaking importance. This feature of critical thinking and reasoning can help everyone become more alert to such instances.

Exercises: Assumptions

In each of the following exercises, (a) determine the assumptions or premises which are missing; (b) express them clearly and accurately; (c) judge the missing premise for truth, reasonableness, reliability, etc.

1. This tax increase is clearly unfair since we have not had a corresponding increase in our income.

2. We should not have to accept larger classes and longer hours when we have received neither an increase in salary nor improvement in fringe benefits.

3. I must cancel classes next Tuesday because I'll be out of town. That will be good news for my students.

4. Since his father teaches at Cornell, he'll want him to go to a good college.

5. What a fantastic smile you have in this picture. You must have been pretty happy that day.

6. Whale hunting is a big part of Japanese industry, thus Emperor Hirohito will surely be in favor of continuing such practices.

7. Emperor Hirohito is a marine biologist of some note, so it is practically certain that, personally, he is against whale hunting, regardless of what his official position must be.

8. There is no point in putting her in the calculus class because she scored below 100 on the I.Q. test.

9. There is no point in submitting the plan since the principal is against it.

10. Look at how all these tiny countries oppose us in the U.N. even though we've given them millions in foreign aid. We should cut off their foreign aid immediately.

11. Since there are no teaching jobs available any more, it doesn't make sense to get a degree in education.

12. Students should be required to take exams because it is well-known that students study harder when they know a test is coming up. Thus, by the end of the course, they will have learned more.

13. "Blessed are the peacemakers, for they shall be called the children of God."

14. I wouldn't trust him. He's an ex-convict.

15. With a degree from Harvard Business School, he will undoubtedly be very successful.

16. She just quit her job. She obviously doesn't realize the state of the economy and the unemployment rate.

17. The bill to aid financially troubled New York City will never get through the House because the overwhelming proportion of the constituency of the representatives are from rural areas.

18. There is no point in trying to teach my values or morals to these kids. I have yet to see them once act in accord with anything I've ever tried to teach them.

19. How can you question the morality of such an action? The Pope has spoken out on the issue. And you are a Catholic, aren't you?

20. Unfortunately, your argument has a missing premise. Thus, your conclusion cannot be true.

21. Sign on New York Thruway: N.Y.C. 140
Mass. Line 30
Conclusion: N.Y.C. is 110 miles from the Massachusetts Line.

22. Ad shows dog looking at two dishes: one contains hamburger, the other Top Choice Dog Food. Caption reads: "If you can't tell the difference, then how can he?"

23. Commercial for Grecian Formula hair coloring: Wife to husband: "Fred, you really did look older with grey hair. I can't get over how much better you look now with just a touch of gray." (after using Grecian Formula, that is)

24. My Maytag does such a fantastic job because the water sprays up from the bottom, down from the top, and to the sides...

25. This argument has 4 terms. It can't be a syllogism.

26. The students who read one year below level are thus actually two years below the average student in their class.

27. Good men die young, so you don't have to worry, you'll be around for a long time.

28. All accidents are caused by poor drivers, so most of them are caused by women drivers.

29. Since atheists do not believe in God, they must be immoral.

30. "The boy's blood type is O. His mother's is A. Your's, sir, is type B. You can't be the boy's father." (from the daytime serial, "Day's of Our Lives")

31. Television commercial: A rather attractive woman comes on and says: "Do you look older than your husband? I used to think I did until I discovered Oil of Olay."

Use of Language

In this section, attention is focussed on the many ways in which language can be used, in the presentation of an argument, to "load" the presentation in one way or another. Very often, the manner of presentation of an argument or the language in which the argument is couched will persuade or incline a person in one direction or another in a way which is completely independent of the merits of the argument itself. In such a case, the "style" of presentation of the argument persuades, instead of what can be said for or against the issue to which the argument addresses itself. Basically, this is possible because of the great richness of language which can achieve varied effects. Some of these varied effects will be considered briefly below. Teachers wish to be aware of these varied powers which language possesses, especially when these powers are being used in conjunction with an attempt to persuade readers of some point. Everyone needs to be sensitive to these linguistic devices for each one hopes that he would be persuaded by the "quality" of the argument presented and not blindly swayed by its "packaging."

Most of such features of language are fairly well known, even if they cannot be precisely expressed by most people. They occur commonly. Teachers wish to be able to spot examples when they occur in such a context as to influence the persuasiveness of an argument. Since these uses are rather familiar, just a few instances will suffice.

A word or phrase can be ambiguous; i.e., can have more than one meaning in English. Sometimes, such a word is used in a way which leaves uncertain which meaning the word or phrase is supposed to convey. And, clearly, no argument can be assessed until we know exactly what is being expressed in the argument. Hence such ambiguity must be resolved. Also, it is common to find the same word used in two different places (e.g., once in a premise, and once in the conclusion), but with two different meanings. If the same word has two meanings, one usage might suggest one meaning by that word here, and the other meaning by that same word there. This kind of shift in meaning is crucial. For though the argument appears to be talking about the same thing in both places (because it uses the same word), it actually is talking about two different things. Such a shift in meaning is called equivocation and is a fallacious move, whether intentional or unintentional. The "moral" to keep in mind here is that sometimes persuasiveness (i.e., validity) of an argument depends upon the use of the same word, but the import or significance of the argument turns upon the shifted meaning of the word. Thus, when

this occurs, someone attempts to persuade listeners or viewers to accept a certain conclusion by use of an argument which begins by using a term in a sense different from the use of that same term in the conclusion, and this equivocal shift is concealed by the "accidental" fact that the same English word is used for both.

In addition to some words being ambiguous, some English words are simply vague; that is, the exact boundaries of what the word means, covers, includes are not clear. Sometimes an argument can use such a word and legitimately establish a conclusion, taking the vague word in the premises with certain limits of meaning or application. But then, if the conclusion is offered or understood in a way which takes the vague word with different limits of meaning or application, greater or lesser, this conclusion is now one which is not supported by the premises (which understand the vague word with different limitations).

Words can connote many associations in addition to that which they specifically refer to or denote. Hence, the use of certain words can call forth in the listener many associations and connections which go above and beyond what the word strictly "means." And since discussion here centers on arguments which are always proposed and considered by persons, obviously it becomes important to take note of how a particular person might respond to a given argument because of some of the words used in the presentation of that argument. Depending upon the words and their particular connotations for a given listener, one could be more or less susceptible to persuasion by such an argument purely because of the associations conjured up by such words. These powerful devices clearly require attention.

By the appropriate use of language, one can also suggest something which has nothing intrinsically to do with what is being explicitly stated. Thus, one can easily send two messages: the one on the surface of what is explicitly stated, the other suggested under the surface. Sometimes this suggestion can have great influence upon a listener or reader, and hence again this is a feature to which all must be alert.

Language can be used to "slant" a statement one way or another. By use of words which clearly have a bias built into them, one can make a statement which already intrinsically contains a bias or "slant" one way or another. Thus, one can "load" or "slant" one's language so that it automatically calls forth positive or negative responses in the listener.

Finally, words or phrases can be used which will immediately tap our deep emotional resources. Thus, language can be used in a way which brings forth feelings of pity, hatred, fear, patriotism. Then the response to the argument is "colored" by an unreasoned emotional response to the associations called forth.

These are only some of the major resources of language. Teachers will probably think of others which they have encountered at one time or another. The important need here is to become conscious of the fact that language can work in these diverse ways, and to become alert to those instances of such use which affect each one's critical thinking and reasoning.

Exercises: Use of Language

In each of the following exercises, determine exactly how the language is used to distort, distract, oversimplify, slant, appeal to emotions, etc.

1. I believe we should get welfare chisellers off the welfare rolls.

2. If we stopped giving them handouts, they would have to work to live.

3. They are not useful members of the society. Look at their voting record.

4. Why should our children be the innocent victims of the waste of this ridiculous welfare system by having to support it for God-knows-how-long.

5. We have been duped long enough by the do-gooders who push for this system.

6. People all over the country are fed up with it.

7. It is a pleasure to address the Women's City Club today, for it is well-known how well-informed you always are on the pressing public policy issues of the day.

8. When are we finally going to get some gun control legislation?

9. Twice now I've seen Professor Foster having lunch with Ms. Williamson. And she does come to his office a lot. Also, I know for a fact that he went to a play last Wednesday night without his wife.

10. Democracy is a form of government in which all men are free to exercise their God-given rights to life, liberty, and the pursuit of happiness.

11. Candidate Cohen has said he would immediately move to resolve the differences between the board and the teachers' union. He realizes the detrimental effect of all this conflict upon the learning experiences of our children.

12. Kahlil Gibran returned to his beloved Becharri, only after death in 1931.

13. The investigation into the alleged misuse of federal funds at the university began last week. Today, the three top men resigned.

14. Picture of candidate in shirt and tie, with sleeves rolled up, and desk cluttered with papers.

15. Picture of candidate with well-dressed, smiling wife and two children, seen in a comfortable home--with a dog at their feet.

16. Ad for Black Velvet Whiskey contains bottle of Black Velvet and seductive looking blond wearing revealing black evening gown. Caption reads "Have you felt any Black Velvet lately?"

17. A reporter, interviewing Angela Davis, an avowed communist: "How do you account for the fact that such a minute percentage of blacks in this country belong to the Communist Party?"

18. a) The auditorium here was filled almost to capacity for Representative Drinan's appearance.
    b) There were a number of empty seats in the auditorium when Representative Drinan appeared here.

19. a) Carole is a bookworm and a grind. She's always got her nose in a book.
    b) Carole is a diligent, persevering, conscientious, and hard-working student.

20. a) Willie is a man of conviction, firm and unwavering.
    b) Willie is obstinate, hard-headed, and closed-minded

21. a) Karen's house is a pigsty.
    b) Karen's home has a well-lived-in look.

22. a) Paula's kids are a bunch of brats.
    b) Paula's children are so full of energy, enthusiasm, and curiosity.

23. a) Rebecca has always shown a concerned interest in the problems of others.
    b) Rebecca's always got her nose in somebody else's business.

24. a) Since her retirement, she has dedicated herself to reform in the finest philanthropic tradition.
    b) Since her retirement, she has become a busybody do-gooder.

Fallacies

Relatively few ways exist in which persons can reason or argue *correctly, but a host of ways in which they can do so incorrectly.* An error or mistake in reasoning is a fallacy, and the reasoning itself, in that case, fallacious. Recall the fallacies of denying the antecedent and affirming the consequent discussed regarding conditional arguments. These were formal fallacies; that is, the errors committed were errors because of the form of the argument. Also, with regard to syllogisms, rules can be formulated which indicate that certain kinds of syllogisms are always erroneous and thus fallacious, again because of the form.

Some fallacies are committed not because of the form of the argument, but specifically because of the content. Isolating several different types of reasoning or argumentation which, because of the nature of what is said, are illegitimate or fallacious in the particular moves they make, can prove fruitful. Only a few of the more prominent types will be listed. Sometimes, these types overlap. Also, the names given here may differ from those given to the same fallacy by other writers. It may prove helpful to keep the following classifications in mind:

fallacy: an erroneous piece of reasoning;

formal fallacy: a fallacy which occurs because of an error in the form of the argument, independent of its content;

informal fallacy: a fallacy which occurs specifically because of the content of the argument.

1. The Ad Hominem Fallacy -- This fallacy derives its name from the Latin expression "ad hominem," meaning "(directed) to the man." The fallacy consists in attacking the person rather than the person's argument. The basic form of this fallacy is:

   Person P makes statement Z
   P is a "bad guy"

   Z is false (bad, wrong, undesirable, etc.)

   Ex. "Principal Carter proposed this grievance procedure for teachers. But he didn't even get his contract renewed for next year. Who's going to listen to anything he says?" This is fallacious because clearly the merits of the proposed grievance procedure are completely independent from whether Principal Carter was re-hired or not (which, of course, is not necessarily correlated with his competency as a principal).

2. Two Wrongs Make a Right -- This fallacy says essentially: "If they can get away with it, then so can I."

   Ex. It is alright for the U.S. to sell military arms to all the countries in the Middle East, even though the same arms are then used to conduct war against each other, because the Soviet Union does it, too.

3. Common Practice or Appeal to Popularity -- The basic form of this fallacy is:

   It is commonly done (or done by the majority).
   It is right (good, desirable, excusable) for us to do it.

   Ex. Justification of huge salary increase for policemen on the grounds that firemen, sanitation workers, transit workers, etc., all received large increases.

4. Straw Man -- This fallacy consists in attacking a position which sounds like your opponent's position but which is really different. Here, one deliberately poses a weak and vulnerable position (the straw man) which, when it is destroyed, will hopefully cast doubt on the position of the opponent.

   Ex. Al Capp quotes Mayor John Lindsay as saying: "The Americans I have unending admiration for are the guys who say, 'I simply will not serve in the Army of the United States and I am willing to take the consequences. Those are the guys who are heroic.'" Capp then remarks: "And so, if Lindsay is elected, his first act as commander-in-chief will, no doubt, be to withdraw the Army from everywhere..."

5. False Dilemma -- The reduction of alternatives or possibilities to only two when, in fact, there are others. Usually these two are constructed in such a way that one alternative is so "horrible" that no one in his right mind would choose it. This leaves only the other alternative, which just happens to be the one espoused by the speaker in the first place.

   Ex. Either you stamp down with force on this student unrest now or all learning will grind to a halt at this university.

6. Begging the Question -- Failure to give any support to the very issue in question, usually by assuming in the premises that which one purports to prove in the conclusion.

   Ex. Judith Crist is not a competent film critic because she is prejudiced; she is prejudiced because she does not like films with a lot of sex and violence; she does not like films with a lot of sex and violence because she is not a competent film critic.

7. Appeal to Authority -- This fallacy says: "Person P says it, and P is an authority, thus whatever she or he espouses must be true or good." This is fallacious when it appeals to an improper authority.

   Ex. Joe Namath is shown advertising panty hose. It would be perfectly legitimate to consult Joe as an authority in football. But we have no reason to believe that he is an authority on panty hose. Thus, an appeal to him as an authority is improper.

8. Appeal to Tradition -- This fallacy says, "We should do it this way or think this way just because it's always been this way."

   Ex. Teachers should penalize and/or punish students for not having their work done on time because it has always been this way.

9. Irrelevant Reason -- Use of considerations totally irrelevant to the conclusion or to the issue.

   Ex. Vote for Sidney Brown. He's a veteran.

10. Slippery Slope/Domino Theory -- This is the fallacious assumption that the first step in a possible series of steps inevitably leads to the rest. This is the familiar "once you open the flood gates..." argument.

    Ex. If you let her stay out past 10:00 p.m., the first thing you know she'll be out all night.

    (This might also be considered an instance of the straw man fallacy.)

    A common variation of this fallacy is the domino theory, the conclusion that if A falls, so will B, C, etc.

    Ex. If South Vietnam goes Communist, so will Laos, Cambodia, Thailand and all of Indo-China, and the Far East.

11. Jumping to Conclusion -- Basing a conclusion on relevant but insufficient evidence (closely connected to fallacy of Hasty Generalization).

    Ex. A news story reporting a local flurry of flag-stealing quoted one citizen as saying: "They took both the flag and the pole. This just thoroughly demonstrates the lack of law and order in our society today."

12. Argument from Analogy -- This is the fallacious assumption that just because two things have several characteristics in common, they will have yet another. The basic form of the fallacy:

    X has characteristics a,b,c,d,e
    Y has characteristics a,b,c,d,e
    X also has characteristic f

    Y also has characteristic f

    Ex. Sidney, who is Jewish, has been married twice before to Catholic women; and neither marriage worked out. He should know better than to get mixed-up with this new Catholic woman. It'll never work.

13. Distraction -- Turning the direction of an argument away from the point at issue by means of an emotive device or irrelevant consideration.

    Ex. On the television program, Sanford and Son, Fred Sanford is defending himself in court on a traffic violation. He begins to cross-examine the arresting officer by asking, "What do you have against black drivers?"

14. Equivocation -- Changing the sense or meaning of a word or phrase in a way which makes the argument sound more persuasive than it really is.

    Ex. Any country which holds elections is a democracy.
    The Soviet Union holds elections.

    Therefore, the Soviet Union is a democracy.

    The expression "holds elections" clearly means two different things in the two premises.

15. Inconsistency -- Saying something now which is logically incompatible with what one said at another time; i.e., contradicting oneself. A special version of inconsistency consists in applying certain standards or principles to someone else, but failing to apply them to oneself.

    Ex. Richard Nixon, September 13, 1966: "He (President Johnson) owes it to the people to come clean and tell them exactly what the plans are: the people should be told now, and not after the elections." Richard Nixon, March 10, 1968, now a candidate for president: "No one with this responsibility who is seeking office should give away any of his bargaining position in advance...under no circumstances should a man say what he would do next January."

16. Oversimplification -- Leaving out relevant considerations in an attempt to make issue appear simpler than it is.

17. Slanting -- A form of misrepresentation by means of suggesting something which is not true.

    Ex. I notice that Ms. Cedarleaf sometimes stays after school with her pupils. At least somebody in this place cares about students.

18. Cliché Fallacy -- Unsupported claim that something is a concrete instance of the general principle contained in a familiar proverb or aphorism. The use of a cliché is not in itself fallacious. It is the failure to show either that (1) the general maxim itself is reliable or (2) this is indeed one of the instances covered by the general maxim.

    Ex. Several people trying to prepare dinner and getting in each other's way. "Too many cooks spoil the broth."

19. Appeal to Pity -- Attempt to win assent by appealing to pity and sympathy of the listener.

    Ex. "Mr. Gallus, if you don't give me a B on this exam, I won't pass this course, and then I won't be able to graduate on time, and I already have this job waiting for me."

20. Complex Question -- Asking a question which assumes something which the person questioned regards as false.

    Ex. "Have you stopped beating your wife?"

Exercises: Fallacies

In each of the following exercises, determine the fallacy committed:

1. When confronted with the charge of corruption in his administration, the mayor replied, "I'm not saying there is no corruption," but he added that any administration of any present-day large city is bound to contain some corrupt individuals.

2. Father: "I'm not voting for any young guy who's just barely out of the play pen."
   Son: "Well, he's all we've got because most of the old politicians are in the state pen."

3. Oliver Wendell Holmes: "The life of the law has not been logic; it has been experience."

4. Are you still using that greasy kid stuff? C'mon man the wet-head is dead.

5. Last year, I worked with a graduate of State Teachers College, and she was the most incompetent "teacher" I've ever seen. So I absolutely refuse to team-teach with this new one from State Teachers. I have enough to do without training her.

6. Last year, I had three students who were new to the school from another part of town. And they caused more trouble and disruption then you've ever seen. With two more this year I know I'm in for it.

7. I've already had the two boys from that family. They were the slowest things in the class. Now I have the youngest, and I decided right away to put her in the slow group, because I know she won't be able to keep up. Those Cedar Leaf kids just can't get it.

8. Man with no legs on the street selling pencils.

9. Joe Namath advertising panty hose.

10. Would you be close friends with someone whose basic principles were diametrically opposed to yours? Of course not. Likewise, our government should have nothing to do with those totalitarian regimes run by fascist dictators.

11. Ad showing Pancho Gonzales in tennis outfit, with racquet, holding a drink in his hand. Beside him is a bottle of Teachers Scotch. Caption reads: "What makes him the tennis player's tennis player makes us the Scotch drinkers' Scotch."

12. Senator Chrisman has proposed this new bill for energy conservation. But need I remind the Congress that the good Senator's state will benefit more than any other state from this bill. We all are aware, of course, that he is facing a tough fight for re-election this year .

13. Is the U.S. Congress being asked to seriously consider a bill out of the ethics committee which was formulated by a man who is right now under investigation for campaign spending violations?

14. Dr. Evans, I know I haven't done the work for your class, but if I don't get a B for this course, my average will drop below the cut-off and I'll lose my athletic eligibility.

15. Oh, I'm so glad you called. I was hoping and wishing so much that you'd call, I figured if I thought about you hard enough you'd get some vibrations. I did, and you obviously did get the vibrations. I knew it would work.

16. Listen, nobody's wearing short skirts anymore. If you want to stay in style you'd better get those hemlines lowered.

17. In 1932, we elected Roosevelt and during his administration we got into World War II. Then we had Truman and the Korean War. Then we had Kennedy and Johnson and the Vietnam War. Can we afford another Democrat?

18. Before going into politics, my opponent had a brief and undistinguished career in business.

19. Before applying to the university for a teaching post in the political science department, Mr. Hutchison ran unsuccessfully for mayor. Do we really want someone teaching our children who couldn't make it in the real world.

20. Those who can, do; those who can't, teach.

21. You said you were going to stay home today and do your school work. I called and got no answer. You were obviously out somewhere goofing off.

22. Let's quit horsing around. The permanent denizens of the welfare rolls, as distinct from the handicapped and the helpless and the temporarily unfortunate, are moral criminals and should be treated as legal criminals too. If parents of a child born out of wedlock are unable or unwilling to care for the child, the parents should be jailed and the child should be put in an institution. For the second bastard, the parents should be sterilized. Here I note, parenthetically, the distinction between punitive sterilization and eugenic sterilization. The latter is forbidden by natural law, by the Catholic Church, and I trust by other churches. Not so the former - though I have no doubt the bleeding hearts would be aghast at the idea. Drastic, yes. But does anyone doubt that our present system calls for a drastic remedy? We should never forget that the cost of welfare is only secondarily financial. It breeds a growing underclass that saps the foundation of education, morals and patriotism, that assures an ever-growing criminal cadre. Welfare attacks America. (William F. Buckley, Jr., King Feature Syndicate, Inc.)

23. "My next completely unloaded question is: shall we seek a disastrous victory in Vietnam by escalating the slaughter or understandably pull out with honor, dignity and the respect of all mankind?" (National Review, April 20, 1971)

24. Dear Ann Landers: Our 12 year old son is selling his homework and my husband thinks its just terrific. He keeps saying "that kid will make it big one of these days." Albert has fixed prices (from what I gather when he talks on the telephone). He gets a dime for an arithmetic assignment and 25 cents for a book review. The boy is doing a very good business. He bragged at dinner tonight that he has saved up $21.00. I think this is disgraceful but whenever I open my mouth I am shouted down. My husband insists that Albert has ingenuity, is smart and is making his brains pay off. If I am wrong, please tell me. If my husband is wrong, please tell him. I'm beginning to doubt my own sanity. (Chicago Mother)

25. "45 Million Women Can't Be Wrong" (Ad for fasteners, zippers, buttons).

26. Geritol ad which shows 7 women. "All These Women are Exactly The Same Age. Some Of Them Just Take Better Care Of Themselves."

27. Ad: "Why did Jeanne Crain, Who Could Afford Any Sewing Machine, Want a Kenmore From Sears?"

28. Picture of candidate sitting in office with papers cluttering desk, dressed in shirt and tie, open at collar.

29. Ad for Temple-Stuart traditional furniture: "So Solidly American Every Generation Loves It."

30. Ad for Virginia Slims: "There is No Other Purgatory But A Woman." (Beaumont and Fletcher); followed by "You've Come a Long Way, Baby."

31. Political Poster: Independent
Robert J. Sarrenti for Representative
Veteran

32. Who has been fighting the tough fights for the people of Roslindale? Keep Mike Connally fighting for you.

33. If you have a head for cars, head for Dodge.

34. Newspaper headline: Guard Fired First Shot At Kent State. (Pulitzer Cameraman)

35. On campaign swing through several midwestern states, Gerald Ford said that more Republicans must be elected to Congress in order to avoid having a "legislative dictatorship."

36. "The reason you don't want to start lying is because once you begin lying, you'll start lying all the time. Lying is like pollution, you drop one little candy wrapper, then you drop another, and then it all adds up. Then you'll have a big pollution problem."

37. Judge Michael A. Musmanno (of the Pennsylvania Supreme Court, which ruled in 1967 that Terry Southern's novel Candy, could not be banned for obscenity in that state) also dissented and took his colleagues to task for saying that, although they allowed Candy to circulate, they did not approve of the book (the court's opinion said the book was "revolting and disgusting"). "This is like saying, Judge Musmanno wrote, "that the court does not approve of a snake entering a nursery, but forbids anyone to build a fence around the nursery to keep the serpent out." (New York Times, October 1, 1967)

38. If you train a dog, when it's a puppy, with appropriate rewards and punishments, it will always obey you in later life. The same thing applies to raising children. If you are strict with them when they're young, you won't have any trouble out of them later.

39. Ronald Reagan speaking about the Watergate burglars: "What these men did was wrong, but they're not criminals."

40. The issue is racism, not busing--Stop ROAR. (Taken from bumper sticker in Boston. ROAR is Restore Our Alienated Rights, a group of citizens opposing busing in Boston.)

41. Relief day and night. Your choice: stay at home with your cold or take Contac.

42. With all the talk about smoking, I decided I'd either quit or smoke True. I smoke True.

43. Arpège. Very simply, the most beautiful gift in the world.

44. Don't just make them feel good, make them feel important. Give the only vodka imported from Russia.

45. Had enough of harsh taste? Come up to Kool, the only cigarette with the taste of extra coolness.

46. Letter to the editor of Newsweek concerning female jockey Mary Bacon, an admitted member of the Ku Klux Klan: "I'm glad to see that a woman has made it in a traditionally all-male field, but has Mary Bacon been kicked in the head once too often? A more tasteless and revolting display of ignorance I've never read!"

47. Letter to editor concerning Vietnamese refugees: "Along with others, I most strongly resent your cover with (The New Americans) blazoned across it. These people are no more American than the thousands of Mexican (wetbacks) who continuously plague our border states. Only an individual who has been in this country, studied, assimilated its culture and passed very stringent examinations is a U.S. citizen, and we are belittling every foreign-born person who has ever striven to obtain the status of 'citizen of the U.S.A.' when we are so intimidated by a President that we accept whatever he dictates."

48. Ladies and gentlemen, our speaker tonight has urged that we actively apply pressure to Israel to solve the plight of the Palestinian refugees. But it is well known that our "distinguished" speaker is an avowed socialist and a brazen womanizer.

(The following are several examples from The Little Prince, as discussed by D'Angelo.)

49. Part four tells of a Turkish astronomer, who, in 1909, discovered a new asteroid through his telescope. When he presented this discovery to the International Astronomical Congress, he was dressed in Turkish costume, and consequently nobody believed him. In 1920 he presented the same discovery dressed in European costume, and now everyone believed him.

50. In part twelve, the Little Prince meets a tippler. The following conversation is carried on between the Little Prince and the tippler: "Why are you drinking?" "So I may forget." "Forget what?" "Forget that I am ashamed." "Ashamed of what?" "Ashamed of drinking."

51. In part fifteen, the Little Prince meets a geographer. A geographer is defined as a scholar who knows the location of all the seas, rivers, towns, mountains, and deserts. When the Little Prince inquires about the geography of the planet, the geographer maintains that this question can only be answered by the explorers of this planet. But this planet has no explorers. Therefore, it is impossible for this man to be a geographer of this planet. The man who calls himself a geographer contends that only when the moral character of an explorer is good will an investigation be made of his discovery.

52. In part nineteen, the Little Prince makes a hasty generalization. From the top of a mountain he observes that this planet looks dry, harsh, and forbidding. (He landed in the desert.) He concludes that the entire planet is this way.

53. It isn't difficult to list the world's greatest books. Their titles spring instantly to everyone's mind because a book becomes great only when it is recognized as being great--generation after generation.

54. In 1961, President Kennedy said we could put a man on the moon by 1970, and we did it. If we can do that, then we can clean up this drug problem in our country.

Implications and Consequences

The feature of critical thinking and reasoning involved here is the ability to "see what follows" from a given decision, choice, idea, position, or claim. This is the ability to say, "If A is the case, then B must follow." This ability to "trace out" or "follow through" implications has many applications. This process is involved whenever one accepts or believes a particular idea or claim or position and then tries to see "what else" such acceptance commits one to hold. That is, one tries to see what implications there are for accepting such a position. This ability is also involved whenever one makes a choice or decision. Usually, one of the major factors affecting a choice or decision is the nature of the consequences of such a choice or decision. Thus, any such choice must be made in light of the consequences. Hence, the need to be able to foresee what would follow given a particular choice or decision.

In short, this feature is nothing more than the ability to make a connection between one thing and another, to see where a series of connections lead, or to see how one thing affects another. This is the ability to grasp the nature and extent of these connections and to determine their logical consequences.

Exercises: Implications and Consequences

In each of the following exercises, try to "foresee" any implications or consequences that will follow from the posited situation or facts:

1. Before, recipients would pay $112 for $162 in food stamps; this amounted to a subsidy of $50. The new proposal would give them $50 in food stamps, for free, with the same amount of subsidy, viz, $50.

   Implications: a) Recipients would receive same subsidy from government, but the cost of administering would be substantially reduced because there would be no need to handle cash in these transactions; b) on the other hand, such a proposal would defeat one of the original purposes for food stamps; i.e., to insure that poor people had a certain minimum amount of food.

2. Suppose the federal government did bail New York City out of its present fiscal crisis.

   Implications: a) There would be complaints from all over the country, "Why should our tax dollars be used to help New York?" (In fact, they already are: 1/4 of New York's budget is federal dollars. But this is probably true of every other city as well. Clearly, this gets to be a matter of degree.) b) Other cities would ask for similar rescue. Even though other cities may not have problems as serious as New York, it is just a matter of degree as to where we draw the line. Once a precedent has been set, upon what grounds can the federal government refuse to help other cities (or states)? c) Another foundation of federalism in this country is threatened every time we take another step away from separate, distinct, autonomous governing units toward one over-arching Big Brother government.

3. Suppose we decide to have a class party so that everyone can get to know each other better, and to establish camraderie. Suppose, also, that we have the policy that everybody brings something and then we all share together; further, if someone does not bring anything then they will not be allowed to eat or drink any of the things brought by the others.

Implication: If someone accidentally forgets to bring something, or is unable to do so, then we must exclude him from the refreshments. This sets up a discrimination, sets him apart, and seems to defeat the original purpose of the party.

4. Suppose we begin now to build nuclear power plants, permit off-shore oil exploration, and develop other new energy sources.

Implications: a) We will develop enough energy resources of our own so that we will not have to buy oil from other countries. This, in turn, will make us less succeptible to the whims of the oil producing countries. Thus, our economy will be less vulnerable to radical effects because of increases demanded by oil producing countries. Hence, our economy will be more stable. b) This would create more jobs, thus helping to strengthen and stabilize the economy.

5. Selling wheat to the Soviet Union and Poland is good for our economy even though it may drive up the price of bread. Some of the consequences show this.

Implications: a) Large amounts of revenue come into the country as a result of the sale. This helps the economy in general, and the balance of payments in particular.

b) Production of wheat creates many jobs for Americans--farmers, truckers, longshoremen, etc. c) This prevents the need to subsidize farmers not to grow crops. This money of ours can then be put to other uses.

6. In South Africa, for example, a campaign was waged against hippopotamuses. Deemed useless beasts that merely cluttered up rivers, they were shot on sight. Result: the debilitating disease called schistosomiosis has become as great a public health hazard in certain areas as malaria was 50 years ago. As usual the missing links in the chain of events were discovered the hard way. It turns out that hippos keep river silt in motion as they bathe. When they heave themselves up riverbanks to dry land, they also go single file and act like bulldozers, making natural irrigation channels. Without the animals, the rivers quickly silted up; without the overflow channels, periodic floods swept like scythes over adjacent lands. The altered conditions favored a proliferation of schistosomiosis-carrying water snails (Time. Feb. 2, 1970).

7. If we continue to talk so long on these long-distance calls, then we will continue to pay these outrageous amounts for phone bills. Thus, each month our "extra" money will not go into savings, but must be used for phone bills. And if we don't save some money between now and Christmas, we'll never be able to take that vacation we want.

8. The union leaders are hoping that the teachers go out on strike., not because of issues or principle, but for merely self-serving, pragmatic reasons. If the teachers strike, the board of education automatically saves money that is not being paid out in salaries. In addition, there will be more money forthcoming (at the end of the strike) when teachers pay their fines for breaking the "no strike" law. All this money can then be used to meet the demands of the teachers' union regarding raises, more fringe benefits, rehiring of laid-off personnel, smaller class size, etc. And none of these demands could otherwise be met by the board simply because they don't have the money--and the union leaders know this. So, if the teachers strike, this ultimately makes it possible for union leaders to report back to them, at the end, and brag that they "got" all their demands.

9. I don't think that we should start staying after school doing work voluntarily on our own time. If a few teachers do it, then there will, sooner or later, be pressure on the others to go along. Then, after a large proportion of us are doing it, the administration will then come to routinely expect such extra work without being prepared to give us any extra compensation.

10. If inflation continues, then the auto workers will demand a steep increase in wages. This will, of course, drive up the cost of autos, and everything else associated with the auto industry. These increases will, of course, make it harder for everyone else to make it--teamsters, textile workers, service industry personnel, teachers, etc. So they will seek increases in order to keep abreast of spiralling costs. This will then raise the cost of all services rendered by all these workers (or products made by them). Thus, the auto workers will have to pay even more for what they need than they did before.

Use of Evidence

Very rarely do ordinary persons have complete, total information or knowledge. But they must nevertheless continue to draw conclusions, make inferences, make decisions and choices. This feature will focus explicitly on the extent to which a person can, with partial, incomplete information or knowledge, learn as much as he can without overstepping the warrantable, defensible grounds for drawing the conclusions which can be drawn on the basis of certain evidence. Involved here are such things as making generalizations, forming hypotheses, making analogies, etc.

Exercises: Use of Evidence

In each of the following exercises, consider the conclusion drawn, given the evidence provided. Consider whether that conclusion seems warrantable or defensible, given those grounds. Suggest alternative conclusion which would be more "acceptable," given the evidence:

1. Traveller (at an airport restaurant): "Is the lasagna any good?" Waitress: "Yeah, we sell a lot of it."

2. Charlie must be a very good student. He studies all the time.

3. The mayor resigned abruptly after the investigation began. He must have been guilty of something.

4. On our trip to Colorado last summer, we counted numerous campers and trailers, many families in cars, and quite a few motorcyclists. It simply isn't true that Americans are not traveling as much as they used to.

5. I have read many books by Carl Rogers - On Becoming Partners, Becoming a Person, and others. In all of them, he displays a warm concern for persons. He must be a very easy man to live with.

6. Because he's written so many books, he must do nothing else but write.

7. Mrs. Green has always been an even-tempered, mild-mannered person. But, lately, she's been on edge, she snaps at her students, she flies off the handle for no apparent reason. She's also been very moody and depressed recently. And since her 46th birthday is only two months off, it is obvious that she is going through menopause.

8. Dear Dr. Quackenberg: With the "cold" season upon us again, I thought I would share a personal discovery of mine with your readers. I used to get colds all the time, but last year I started taking a warm bath before going to bed each night. I did not have a single cold. You will surely want to inform your readers who have suffered so long with this common ailment.

9. Dear Dr. Quackenberg: If your readers want a sure-fire protection against colds this winter, let them do as I did. For five years in a row, I have not had a single cold. The reason is because each night before bed I drink a cup of hot tea, honey, lemon, and bourbon. I don't know enough medicine or physiology to be able to explain why it works. All I know is that it works, for that nightly ritual was the only thing I've done differently over the last 5 years, from all the preceding years when I could count on at least three colds each year.

10. Dear Dr. Quackenberg: Enough already with all these home remedies and old wives' tales about preventing colds. There is a scientific method which will protect anybody from catching a cold, and its simple: take vitamin C. It has worked for me--and thousands across the country. And though that should be enough to convince any open-minded person, I'll just add that this procedure has been emphatically recommended by a Nobel laureate in chemistry. So let's come out of the middle ages, utilize the advances of modern science and technology, and save this column for exchange of information that people really need, as opposed to mere swapping of tall tales and myths.

11. There's been a lot of talk recently about whether plants are affected by talking to them or by playing music around them. I would like to comment on the second aspect since the first is too well established to be doubted any longer, in my judgment. I talk to my plants and they are all thriving. But I would like to show that, contrary to common opinion, classical music is not the best kind of music to enhance the growth of plants. (I'd like to note that I have all kinds of plants: succulents, annuals, perrenials, etc.). My plants are in the same room as my stereo. I go though phases with respect to my listening habits. For awhile, I'll listen to mostly classical. Then I'll be into jazz for a long time. Then I'll listen to rhythm and blues. After that, maybe back to classical, followed by a switch to folk and popular. So my plants are exposed to all kinds of music. And as a matter of simple fact, empirical observation, they grow more readily when I am playing jazz. I hope everyone will appreciate how

broad is the spectrum of different species of plants. This should convince anyone of the reliability of my observations and the truth of my conclusions. Perhaps this will help, in some small way, to destroy the myth of the pseudo-sophisticates who think that classical music is the only real music worth the name, and that everything else is mere noise.

12. One of my colleagues conducted a study at one time to determine the effects of television violence on the behavior of young children. He watched all the Saturday morning television programs regularly for an extended period. He discovered that in these shows over 80% of all conflicts were resolved by the use of violence. He then observed the behavior of a number of children who were known to regularly watch these shows. He noticed an extremely large amount of violent behavior in the interactions between the children. He also noticed that very frequently this violent behavior took forms identical to those used by their T.V. heroes. He concluded that since the behavior he noticed was of a very minor nature (after all, none of the children were committing murder or manslaughter), and because this could be adequately explained simply by taking into account the boisterous, rambunctious nature of children in general, the major effect of T.V. on these children was the enhancement of their imaginative faculties which were clearly involved in their identification with the T.V. heroes and their subsequent imitation of those heroes in their own lives.

13. It was 1948 when Jackie Robinson broke the color line in professional baseball. And it was not until 1975 that the first black manager of a major league baseball team appeared--this despite the large numbers of black players who have come through since 1948. Likewise, in pro-football, in spite of all the outstanding black players in the National Football League,we still have yet to see a black head coach. Whereas, in pro-basketball,we have for some time had black coaches and player/coaches. This all just goes to show something which I've felt for a long time. There is a much higher incidence of prejudice and bigotry among those who are more violent by nature (i.e., those associated with the violent "sport" of football),than among those who are very conservative (i.e., those who still are interested in that old worn-out game of baseball).

14. On top of all the recent revelations about the dangers of our modern way of life, I have discovered yet another one. I have recently begun jogging here in the City of Boston where the air is known to be very bad. Right after I return from

running a mile or two, I cannot eat and have no appetite. Though this might sound shocking, it is obvious that breathing so much of that filthy air while running adversely affects the appetite. Hence, as our air gets worse and worse, we can expect more and more people to lose their appetites, stop eating properly and begin to suffer from malnutrition and disease. Our rancid air will lead not only to death by respiratory disease, but will kill thousands by malnutrition.

15. I knew I wasn't ready for that test today. I hoped something would happen--anything. So I really concentrated my thoughts and wished as hard as I could. Then just as the teacher came into the room, some crank pulled the fire alarm again. And, by the time class resumed, it was too late to give the exam. I knew something would happen. Obviously my "vibes" must have gotten to that guy.

(The following three examples, used by Dr. D'Angelo, are taken from Mark Twain's The Prince and the Pauper)

16. There is some doubt expressed as to whether the Prince is an imposter or whether he has gone mad. The fact that the Prince ate with his fingers and left the table just as the chaplain began the blessing were used as evidence to show that he was insane. Assess this evidence.

17. A witch foretells that a sick man will die from poison, and that a stranger with brown hair and common garb would give it to him. A man was found dead with poison in his body and a person with brown hair was accused of the crime. Assess the evidence.

18. A woman and a child are accused of making a pact with the devil. It is said that when they removed their stockings in church, they brought about a storm that damaged the region. Assess the evidence.

Part III

Teaching Strategies

This portion of the handbook will consider, exclusively, some suggestions for particular activities, procedures, assignments, methods, techniques, strategies for the teaching of critical thinking and reasoning. These will be divided according to the categories given in Part II. It is hoped that, eventually, these critical skills will be woven into the regular activities of the classroom. But, in the beginning, it is helpful to initiate specific student activities designed to improve a particular critical skill. Also, it is reassuring and helpful to the teacher to have available a set of suggestions already worked out to use as a starting point.

Deduction

Objectives: Students should be able to:

1. Distinguish exposition from argument.
2. Distinguish major kinds of arguments; i.e., deductive or inductive, conditional, syllogistic.
3. Separate the point of an argument (conclusion) from its supporting reasons (premises).
4. Take an argument in which logical relationship between its parts is obscured by manner of presentation and re-state argument so that its logical structure is more readily apparent.
5. Determine validity of standard arguments; i.e., conditional and syllogistic.

Procedures:

1. Present to class examples of expository writing and examples of arguments. Discuss differences between the two. Then have students collect examples of each from newspapers, magazines, other classes, books they are reading, etc. Then have students write their own examples of expositions and arguments.
2. Have students take short arguments and analyze the logical structure; i.e., determine which statement is conclusion, which statements are reasons supporting the conclusion, which other statements support the first set of reasons. Then have students re-state the arguments in such a way that their logical structure is more readily apparent.
3. Present examples and discuss with the students the differences between deductive and inductive arguments. Have students find examples of each from outside class. (A scrapbook can be very useful to keep a growing collection of examples.)

4. Explain the nature of conditional arguments and syllogistic arguments. Present criteria for validity and explain techniques for determining validity. Have students do exercises. Have them collect examples from outside of class and apply techniques to those examples. Encourage students to try to sharpen their logical "intuition" by first making a judgment about the validity of the arguments before they apply the techniques. Then, as time goes on, perhaps their intuition will become more and more accurate.

5. Conduct class debates or class discussion and, afterward, give explicit, deliberate attention to the reasoning processes taking place during the activity.

The following activities are more particularly suited for lower grades:

6. Have students pick a problem which needs resolving. This can be an ordinary problem which one encounters frequently at home or school; e.g., disagreement with parents, unfair discipline, punishment, allowances, unpopular school policies, etc. The problem can also be one selected from one of the students' readers. Have the students present their solution to the problem, making sure they separate their solution from their reasons for thinking that this solution will work best. For example: In one story, a group of children are riding in a cart pulled by a pony. The pony stops in the middle of a busy intersection and will not move. Problem: How do you get the pony to move? Some possible solutions are: 1) scare the pony, 2) strike the pony, 3) hold food in front of the pony, 4) offer the pony money, 5) whisper "please" in the pony's ear. For each solution offered, the students will have to say in effect, "I think this is what we should try because..." Thus, it is obvious that this requires the student to take just that notice of supporting reasons which is crucial to understanding the concept of an argument.

7. If your students are studying the American Revolution, something like the following might be fruitful. Ask the following questions: Why do you think some of the people were Loyalists? Why do you think they acted that way? How do you think they felt about everything that was happening? What do you think was the most important thing to the Loyalists at that time? Then ask the same questions about the Revolutionaries. Then ask the students: "If you had been living back in those days, which side do you think you would have chosen? Why?"

8. The following role-playing activity can help young students to see not only the relationship between conclusions and supporting reasons, but also helps them to see the different ways in which we can respond to what we hear and/or read. Select three students. Have the first student give reasons why the other two should believe some idea or proposal; i.e., present an argument. Have the second student consider carefully the reasons which the first student provides before he decides whether or not to go along with that idea. Have the third student portray a person who, in a totally uncritical manner, ignores all the reasons and either (1) accepts the idea without consideration of the reasons or (2) rejects without consideration.

9. Students watch a lot of television. So, it would be profitable if that could be used as a source of learning for them. Choose a program which is popular, some mystery show or science fiction show. Ask the students to think about the plot or story line. Ask them if they think the ending or resolution of the story was really adequately prepared by the rest of the program. For instance, ask them if the solution of the crime or mystery really was adequately set up by the clues given. If not, ask them to rewrite the plot so that the story clues do provide a sound basis for the given resolution or ending.

10. Some games could be conceived to assist in the learning of these skills:

    A. Construct a version of the game, Concentration. On one side of index cards or construction paper, place either the word "exposition" or the word "argument." Make several of each. On another set of cards, place short passages; some of the passages will be expositions and some will be arguments. The index cards should all then be randomly placed side-by-side in horizontal and vertical rows. The index cards are covered until one of the players requests to see it. Each player, in turn, chooses to see two cards. The object is to try to choose two cards such that one card contains a passage and the other card correctly describes the passage as either an exposition or an argument. The rest of the game can be played exactly like the original Concentration, or the participants may develop variations.

B. You may devise a variation on the game of Monopoly or Clue or the like. Construct a board and paint on squares, using the Monopoly board as a model. The students will each have "men" to move around the board. They can use dice to determine how far they are allowed to move. Whether they will be allowed to move forward, or must go backward, or remain in place is determined in the following way: Take a large deck of cards. Each card contains a short passage. When the student draws a card, he or she must correctly identify the kind of passage it is; i.e., either an exposition or an argument. Then, there should be appropriate rules for moving, contingent on whether the answer is correct or incorrect or a pass. These details, you can work out to your own taste.

These are games that can be wholly constructed by the students. They can be played by the students without any supervision from the teacher. Obviously, both these games could also be played with the object being to distinguish deductive from inductive arguments. Possibly, you could also devise a version that involved all four at once: exposition, argument, deductive argument, inductive argument.

Obviously, we would do the same thing involving the distinctions: conditional argument/syllogistic argument; valid argument/invalid argument. You could also have other versions which require the student to determine and state what assumption is being made, what fallacy is being committed, if any, how language is being used to slant or distort. Clearly, the possibilities are endless.

11. You might also combine the learning of these skills with the art work of your students by having them design and construct something like a collage, or room display, or bulletin board which involves what they have been learning in the area of reasoning and critical thinking.

Assumptions

Objectives: Students should be able to:

1. Detect "missing link" in a particular line of reasoning.

2. Articulate the missing assumption or premise.

Procedures:

1. Give the student some standard syllogistic argument, with one of the premises missing. Have them determine what premise must be supplied in order to make it a valid argument.

2. Have the students make up their own examples of the above. Then, do some of them in class; let students exchange exercises and do them for practice. In both of these activities, it is unimportant how realistic or fanciful the exercises are. The important feature is the practice obtained in detecting and expressing the missing premise.

3. Have students again make up exercises. But, this time, specifically indicate that the "subject matter" or "content" of the example must be taken from real life situations. That is, the statements which make up the arguments should, for example, be taken directly from their textbooks, or be about the same topics discussed in the textbooks. Again, the statements which comprise the arguments could be statements about the kinds of things they discussed in class, talked about after school, heard on the bus, saw on T.V., heard at home, said in another class, heard another teacher say, etc. The important thing is that the examples be realistic. This will be, to a large degree, accomplished by restricting the content of the examples to real life subjects, issues, or topics.

4. Have students discover--not create--examples from the areas mentioned above; i.e., other classes, at home, T.V., etc. This final step will help sharpen students' ability to perceive when a "partial" argument is being made with a premise unstated or implicit. The student will also come to see how widespread this is.

These discussions help students to see that a missing premise does not always imply deceit or malicious intent. Premises are frequently missing because the speaker himself does not realize he is making such an assumption for that line of thought to be convincing. Sometimes, the speaker takes it for granted that everyone--or at least the listener--accepts the missing premise as true; thus, there is no need to belabor the obvious. Sometimes, the missing premise is of such a general, broad nature that practically everybody accepts it and must have forgotten that they accepted it. The most prominent examples of the latter are basic cultural beliefs of our society. They are so widespread, learned at such an early age, and so all-pervasive that we simply "forget" about them. But, in many ways, these are the most important assumptions a person will ever need to "dig out." And this is not necessarily to uproot them. For many of these cultural presuppositions which we "unveil" will be perfectly acceptable and totally persuasive to us. But, the point is, one can never make such a judgment for himself unless he first digs out that assumption, assesses it for himself, and then makes a judgement on that basis (as opposed to being forever blindly informed and influenced by some all-powerful, indistinct "given"). Hence, the absolute necessity of being capable of digging out the assumption in the first place.

5. Give the students a situation about which they have only partial knowledge or information. The situation could be presented by the use of facts and figures or by several statements containing the supplied information. A very interesting method of doing this is the use of pictures or photographs preferably showing a person doing something, but in a way in which it is not definitely clear exactly what the person is doing. (Such pictures are available in kits produced by the Aesthetic Education Program, CEMREL, Inc., St. Louis, Missouri. These kits bear titles such as "Point of View" and "Characterization.") Then ask the students to state what they think is going on. In other words (and this focus applies also to the first two variations), ask the students to draw whatever conclusions they can on the basis of the picture they have before them. (Attention here centers not in how warrantable are the conclusions students draw. That feature belongs to the discussion of the use of evidence. This distinction is drawn here merely for the purpose of exposition. In a real classroom situation, it is quite possible to attend to both the assumptions and the use of evidence, if the students have already learned to differentiate the two.) After the students have drawn their conclusions, go back together and isolate

the assumption made in order to reach those conclusions; i.e., state what further pieces of information were supplied by the students. This exercise helps students to see how readily we fill in the gaps by making assumptions. It also helps them to see how common this tendency is. After the assumptions have been isolated, together discuss and assess them for truth, likelihood, reasonableness, bias, fairness, provincialism, etc.

6. Read to the students a statement and then ask questions which will determine what kinds of assumptions they made regarding the statement.

   Examples

   1. The first grade teacher was relieved of all teaching duties today:

      Question: Did you assume the teacher is: a woman?

      Did you assume the teacher is: white, black, Spanish?

      Did you assume the teacher is: American?

      Did you assume the teacher was at fault?

   2. Liquor Store at Hollywood and Vine robbed today:

      Questions: Did you assume the robbers were male or female? Both?

      Did you assume the robbers were members of any particular ethnic group?

      Did you assume the robbers were young kids? Hardened criminals? Ex-Convicts?

7. Suppose the class is reading a story or novel or play. There is always a limited extent to which the character and personality of each of the fictional persons can be detailed. Ask the students to speculate about some of those characteristics which are not discussed by the author. For example, with reference to a particular character, ask questions: How do you think she'd like to spend her spare time? If she were to enroll in a class, what kind of class do you think it would be? What kind of people do you think would be attracted to her? What kind of people do you think she would be attracted to? What things do you think were really important to her? What do you think she loved/hated? What do you think her family background was like? What kind of friend do you think she'd make? What kind of aspirations do you think she has?

What do you think are her major positive traits? Negative traits? What do you think she thinks of herself? How do you think she would react in a situation of kind X? What type of books would she read? What films do you think she'd go to see?

This is just a sample. Anyone with more imagination could think of dozens of provocative questions (some of them, of course, may have been answered already in the text). To give answers to such questions, the student must obviously draw conclusions; furthermore, this must be done on the basis of some evidence. But, here, these are not the features we wish to highlight. Just as clearly, the students must make many assumptions in order to get from what they do know about the character to what they would guess to be the case. For example, they will, in some cases, have to assume that a certain "kind" of person (i.e., one with certain characteristics) will respond or behave in a certain "kind" of way. (I.e., will manifest certain other characteristics.) Whether this is true or not, or whether it can ever be determined, it is important that the students learn to realize that they did make such an assumption. It is these assumptions to which we wish to draw attention. Two final notes: (1) In the discussion, make sure the students see how commonly we make such assumptions regarding our knowledge of individuals. One never has more than partial information, knowledge, or understanding of another person. Yet, we are inevitably induced into making assessments of them, making predictions about them, forming expectations of them. It would be very valuable for each person to be more consciously aware of the assumptions we make, the things we take for granted in our thoughts and feelings about another person. (2) During discussion, also give particular attention to the extent to which these assumptions were explicitly realized by the student who made them.

8. Read a mystery/detective story far enough to get all the evidence. Then ask the student to determine the villain on the basis of the evidence. This exercise can obviously be used for assessing the use of evidence. But, it can also be used to detect the assumptions made by the students in using the evidence in such a way as to exonerate characters. A more sophisticated version of this exercise (which could again be used both for assumptions and evidence) would have students themselves write the story, deliberately leaving clues in such a way that when combined with the

most obvious and simple-minded assumptions, they lead the reader astray. Students could also watch a T.V. mystery (e.g., Perry Mason or Ellery Queen) then assess the evidence and discover the assumptions made.

The following are more specifically suited to lower grades:

9. Have students isolate assumptions we make in everyday life; e.g., whenever we sit in a chair, we assume that it can support our weight; we assume that we will eat dinner tonight; we assume that the teacher will be in the room when we get there; we assume that, after a certain number of hours of darkness, it will become light again. Having them isolate these common assumptions and letting them see how pervasive such assumptions are will help prepare the students to then isolate assumptions made in written material, conversation, television, etc. A very worthwhile activity is having the students pick out the assumptions made in commercials and advertisements; students are really quite adept at seeing what certain commercials assume; i.e., that "ring around the collar" is "disgraceful," or that body odor is undesirable, etc.

10. Prepare a list of facts and opinions. Have students determine which is which.

11. Have science students make very careful observations of some object, process, etc., without making any changes. Then ask them to state what inferences or conclusions they can draw just from their observations. Specifically draw to their attention those things which they "took for granted"; i.e., assumed. Then, have them consider whether such assumptions are warranted in this case. If so, why? If not, why not?

Loaded Language: Use of Language and Fallacies

Objectives:

1. Students should be able to detect the presence of loaded language, whether written or spoken.

2. Students should be able to determine the direction of loaded language, and be able to articulate the purpose or intent of the writer or speaker.

3. Students should realize that all words have built-in associations and connotations. This evocative power is not necessarily bad, and is sometimes quite valuable, especially when one wishes to express emotional dimensions.

4. At the same time, students should be aware that some words have very strong and definite effects on people's thinking (e.g., "conservative," "reactionary," "extremist," "selfish")--effects which S.I. Hayakawa calls "snarl words," or "purr words"; such words or phrases almost automatically bring out strong negative or positive responses in each individual.

5. Students should be able to recognize the more common devices used in connection with loaded language: ad hominem attack, appeal to pity, guilt by association, appeal to common practice or popularity.

6. Students should develop the habit of applying all of this to everything that goes on in the class: statements found in textbooks, made by teachers, other students, himself.

Procedures:

Two features deserve mention:

Each student should present her or his example without any explanation. Let the class discover which language effects are involved in the example, then discuss.

The students should be allowed and encouraged to carry on these activities without intervention by the teacher. That is, the teacher need not and should not "explain" or give the final answer. As the class becomes more and more proficient, they will need the teacher's opinion less and less.

And even when they do require the teacher's judgement, this will be seen not as the answer, but as the considered judgement of me who knows more than they do. Thus, your answer should be accorded the respect and consideration due it, but should be finally accepted or rejected on the merits of the answer one way or the other. Finally, if the students are uneasy about standing in front of the class, this activity lends itself to a circular arrangement of desks.

1. Present to the class some very simple and easy to see examples of how language can be used to "load" a statement. Discuss with the class exactly how the loading is achieved, and to what effect.

   a) Sometimes this is achieved by use of a particular word.

      i.e., He is the most antisocial kid I've ever seen.

      She's the sweetest little thing in my class this year.

   b) Sometimes this is achieved by emphasis.

      i.e., Mr. Swartz is finally going to do something about his students' behavior.

   c) Sometimes this is achieved by intonation.

   d) Sometimes this is achieved by an expression of the face, or other body language.

   After choosing examples of these and other means of "loading" and discussing how the "loading" is accomplished, then discuss the effect of the loading; i.e., discuss exactly what it is that is accomplished. Discuss how this affects what people think or feel when they hear it. Ask the students if they can think of any examples? If so, share them with class and discuss as before.

2. Present to the class slightly more subtle or sophisticated or less obvious examples. Discuss as above. It is important to help students see that this is serious business, and not just an interesting little game.

   a) (This exercise is more appropriate for older students.) Present the class with examples showing the importance and power of such techniques historically: the campaign against women's suffrage in this country; the

propaganda against newly immigrated ethnic groups; e.g., the Chinese on the West Coast; the defense of slavery in this country; anti-German propaganda during World War I; governmental campaign against the evils of marijuana; anti-Nazi propaganda; rhetoric for and against the Viet Nam war; controversy about amnesty after the war. By seeing examples such as these, the students can see that these techniques are very powerful and that serious consequences can turn upon the success with which loaded language techniques are used.

b) Present the class with examples from the realm of interpersonal relationships and show how our feelings can be so greatly influenced by the way in which language is used as a means of communication. This can be understood by anyone who has feelings, and, thus, can be a procedure useful at all levels including lower grades.

Examples:

1. Have the students try to imagine how they would respond to each of the following pairs of statements; then ask them to try to articulate and discuss those responses:

   (a) "That's the most ridiculous idea I've ever heard."

   (b) "Kevin, I'm not so sure that idea will stand up. Let's look at it a little more closely and see what we come up with."

   (a) "Listen, I can't waste anymore class time trying to show this to you."

   (b) "Lynn, I'm sorry but we must move on to something else. If you still don't understand it, let's talk about it after class."

   (a) "Johnny, if you don't have enough sense not to pour your finger paint all over Susie's clothes, then you just go sit at your desk by yourself."

   (b) "Johnny, you should be more careful with the paint, and you must not pour paint on Susie. If you continue, I will have to take the paint away from you."

Obviously, a whole book could be written about the differences between these responses and why they are important. Such instances can be used to help students become more consciously aware of the effect of language upon us all, and to help sensitize them to such usage, both in the cognitive realm, in which certain ideas are produced by certain language, and in the affective domain in which certain feelings are produced.

3. Have the students bring examples to class. At first, place no restrictions on the source. Also, in the beginning, the teacher may wish to preview the examples to make sure they will be helpful to the learning process of the students and not generate more confusion than learning. This does not mean that you must only approve "legitimate" examples. Quite frequently, more is learned from examining a "bad" example then from analyzing another good one. But the teacher must make a judgement as to the readiness of the students for this kind of challenge. After this has been done, then it is helpful to specify the sources from which the examples are to be taken; i.e., newspapers, magazines, comic strips, television news programs, regular television programs, jokes, textbooks, other classes, something said at home, something said by one of the students' friends, something said by the student himself. Requiring examples from each source forces the student to develop awareness and sensitivity in all these diverse aspects of his life, both written and spoken. As the class grows more proficient at this, let each student present his own examples to the class.

4. After students have had sufficient experience at detecting and discovering instances of loaded language, have them create their own.

   a) Have students deliberately load or slant a passage by the use of language--first in one direction, then the other. Then perhaps have them try to make passage neutral. You might begin with a simple sentence, for the sake of simplicity. Then you might move on to longer passages or an entire essay. This works especially well if you have them write about a controversial issue.

   b) Have students conduct many speeches or harangues in class with all the features of (a) above.

   c) Have students create ads or advertising campaigns for real or imaginary products. This is especially enjoyable if students choose a "ridiculous" product and then try to seduce the consumer by the advertising.

   d) Have students take a news story (real or imaginary) and write headlines for story--with features of (a) above.

   e) Have students look at pictures and write loaded or neutral captions; then have them analyze political cartoons or even judiciously selected regular cartoons.

f) Compare headlines from different papers on same news story.

Compare the two following headlines regarding President Ford's adamant refusal to provide financial aid to New York City during its fiscal crisis in 1975.

New York Times — Ford Castigating City...

New York Daily News — Ford to City: Drop Dead!

Also compare newscast styles; e.g., the language on C B S evening news with that used on A B C news regarding the same story. Choose a local newspaper or periodical widely read by students. Follow the publication over a period of time and keep track of the linguistic devices used to load or slant their presentation.

5. Have students write a descriptive paragraph in which they attempt to characterise a fictional or living person. Make sure they understand that the characterization is to be made by the way in which the language is used, not by explicitly saying that this character is such-and-such. Younger students enjoy the game in which they write a short passage about one of their classmates which describes, but does not name that person. The other students try to guess the classmate's identity from the descriptions given. All these exercises help sensitize the students to the language they use.

Implications and Consequences

Objectives:

1. Students should be able to see beyond the immediate present when considering a given situation.

2. Students should be able to foresee consequences of a particular deed or a particular course of action.

3. Students should be able to make plans intelligently and see what actions are required in order for plans to succeed.

4. Students should be able to discern how certain implications inevitably follow once one has taken a certain idea or statement to be true, or accepted a certain value or principle as good.

Procedures:

1. Hypothetically, choose some particular classroom policy. Then have the students try to determine the effects or consequences of such a policy. It is easier to get started by choosing a policy either radically different from existing policy, or rather ridiculous. This more readily generates thoughts as to the consequences of such a policy.

   Examples:

   In attempting to be more responsive to students needs, suppose the following were attempted. What consequences could you see following from each?

   - Suppose a student is late submitting an assignment. She or he is not automatically penalized. Instead, the teacher consults the student regarding the assignment. If the student has a good explanation, then the student is excused from that assignment until such time as she or he can do it.

     Questions: Who decides what constitutes a "good" explanation? Who decides when sufficient make-up time has been allowed?

Presence in the classroom is completely voluntary. One can attend or not as they choose. If a student does come to class, he may do so at whatever time he pleases, and he may leave the class when he pleases, with or without returning.

Examinations are optional. The choice is up to the individual student.

Classroom discussions will be made more relevant to interests of the students. Thus, if the particular topic suggested by the teacher is not of interest to the class, they may choose to change the topic.

a) How is this lack of student interest determined:
   1) If majority is uninterested, then a change may be made;
   2) If only one student is not interested, a change may be made.

b) Change may be:
   1) Requested by the class; or
   2) Demanded.

c) How is the new topic determined?
   1) By teacher
   2) By class majority
   3) By first student who raises objection.

d) What happens if new topic is deemed uninteresting?

2. Play the game, "What If...?" The situation chosen can vary from wildly hypothetical to quite realistic. Even wildly hypothetical situations are fruitful for the students are still engaged in trying to see "what would happen." The situations chosen from actual life will obviously seem more pertinent to the students. But the skill involved is the same in each case. This is a technique which does not require any special new strategy. It can be woven right into any lesson. It merely requires you to stop at an appropriate place in the lesson or discussion and essentially ask out loud (together), "I wonder what would happen if...?" This obviously can be done in any class or with any subject matter.

Science: What if...sound, instead of light, traveled in a straight line? I.e., what if we could see around corners, but could hear only in the direction straight out from our ears?

History: What if...the United States had never entered World War II?

Geography: What if...there were no trees in this part of the world, only small bushes.

Economics: What if...the government just printed enough money to give to everyone in need so that they could obtain what they needed.

Literature: What if...no words in our language rhymed?

What if...we were all 6 inches tall...

What if...graduation were determined by examination rather than age, or number of "years served" (cf. new California High School proficiency exam).

What if...we did not have eyes (cf. short story by H. G. Wells).

What if...everyone had a guaranteed comfortable income for life, whether they worked or not.

3. Role playing. This activity requires empathetic insight into another person whose role is being assumed. Role playing also requires attention to the consequences which ensue given the make-up of the other person as perceived by the role player. If the students are mature enough, (and this is not strictly correlated with age,) it is possible to have students play the role of others in the class including the teacher. But these situations have to be carefully chosen and closely monitored. Also of great importance are the overall atmosphere or climate in the class, the rapport among the students, the security felt by the students relative to the group, etc. But there are plenty of other occasions for role playing. Suppose the class is studying a historical figure such as Susan B. Anthony. After studying and discussing all the available information on this person, ask each student in effect to "become" Susan B. Anthony. Choose a specific point in her life and ask the students: 1) What are your feelings? 2) What are your thoughts? 3) What do you plan to do or achieve?

Literature: Suppose the class is reading Shakespeare. Ask the students to consider all they know about Shakespeare: where he lived, when he lived, his personal and family life, his success, his belief and values about life, death, love, honesty. Try to determine what Shakespeare might have been thinking and feeling while writing "Hamlet," what he hoped to accomplish, what he tried to express, what he wanted out of it for himself. Obviously, this procedure can also be adapted for other pieces of literature and their authors.

Obviously, such activities can be extended indefinitely with any subject matter and with any level student. We can also extend this exercise to non-human subjects. There is presently a lot of controversy about whale hunting. If you are studying whales and/or ecological issues in general, students can try to "become" whales and again have them ask all the pertinent questions.

This activity can profitably be extended even to inanimate subjects. Ask the students what it would be like to be a car. To be sure, this type of role-playing is getting into the realm of creative rather than critical thinking, but the exercises develop the student's capacity to examine other viewpoints. The activity need not take the form of "mere" thinking and/or talking. The students can assume a role and then provide their "answers" not in speaking, but perhaps in writing, or perhaps in a comic strip, or a puppet show with dialogue or a demonstration in class, or a piece of art or a film.

If the students are creative and imaginative enough they might even conceive of a second person with whom the central person could interact in some significant way. This interchange would usually involve some contemporary and associate. However, the exchange could prove illuminating, for example, to have students role-play an encounter, based on their empathetic insights between, say, Socrates and Richard Nixon!

In all these activities, the students' empathetic sensitivity is enhanced. This is an undeniable gain for any person. In addition, the student is obtaining practice at trying to see how some things lead to other things, how certain

implications are practically inevitable given certain circumstances, how consequences follow choices and decisions. They are getting practice, in seeing how things are connected to each other. This will hopefully lead them to see more clearly in their own lives (their thoughts, feelings, choices, decisions) the interconnectedness of varied aspects.

4. a) Have students plan and implement a class activity. Suppose a high school class decides to have a party. Let them plan everything. Let them see that if they want the final result (the party itself) to come out as they wish, then it follows that certain things must be done before that time arrives. Let them see that failure to foresee the need of certain preparations or failure to carry out certain preparations will have consequences for the party itself.

   b) Suppose an elementary class wishes to bake cookies next Friday. Let them see that certain things must be done, else they will not achieve their objective. The class must choose a recipe. How will that be obtained? Which mothers will be asked? How will the class choose from among all the recipes? What about equipment, pans, spoons, measuring cups, etc.? What about ingredients? Will everybody bring one of the ingredients? On a particular day? As soon as one wishes? What about perishables like milk and eggs? What about identification of bowls? What about clean up? Let them also see that planning, which is such a crucial feature of our lives, absolutely requires the ability to look ahead, foresee consequences, see implications and, of course, the resolution to do what is required.

The following are especially suited for lower grades:

5. This is a way in which attention to consequences can be combined with the student's study of mathematics. Most students have at least some money of their own. Have them consider the consequences which would follow if they spent that money in one way rather than another. This kind of exercise is especially impressive if the student has some kind of financial obligation, however small, which must be met, if at all, with that money under consideration. Have the students appreciate the consequences which could follow from certain kinds of action regarding money: poor record-keeping habits, not counting your change, not examining your checking account, etc. Students really feel the consequences when they are such as to prevent them from doing something which they want

very much to do. For example, one possible consequence of not counting change when buying a movie ticket is that the purchaser, not discovering that she or he was short-changed, now is unable to afford popcorn.

6. Ask the students to imagine that they are marooned on a desert island, or better yet, a lost planet. Ask them how they would organize things there. Who would be leader? Who would do which tasks? How would disputes be settled?

   Then ask them to try and foresee the short-and long-range consequences of organizing their "society" in one way rather than another.

7. Many students have difficulty abiding by school rules. This activity will give them more practice in foreseeing consequences and at the same time perhaps help them see some of the rationale behind some rules. Consider some particular rules such as not running in the halls, not taking classmates' pencils or books or lunches, being on time for school, bringing a note from parents when absent, not bothering articles on the teacher's desk. Then ask the students to try to foresee what would happen if there were no such rules or if there were different rules.

Use of Evidence

Objectives: Students should be able to:

1. Identify the evidence offered to support a conclusion.

2. Distinguish factual assertions from statements of opinions, value, etc.

3. Identify the difference between the evidence offered, and the hypothesis or explanation or theory proposed to account for the evidential data.

4. Understand that there are always alternative explanations for a given body of evidence or set of data, and that criteria can be applied to help the student decide between the alternatives. Students should be able to apply these criteria.

5. Understand and use the different criteria for judging the relevance and value of a given piece of evidence.

6. Understand that there is no such thing as a "bare" fact; identify various non-objective factors which affect even primary evidence, "hard cold facts;" e.g., in eye-witness reports.

Procedures:

1. Read some mystery stories involving evidence: The Gold Bug, Robinson Crusoe, Lord of the Flies, or several of the Sherlock Holmes series, or several novels or short stories by Agatha Christie. Then simply discuss explicitly the use of evidence found within the story. Emphasize the difference between the critical use and the imaginative use of evidence. The critical use of evidence helps the searcher to follow a particular path. Critical use keeps him from making mistakes. Critical use of evidence rules out certain possibilities. The imaginative use of evidence, on the other hand, generates possibilities, not because any of these possibilities is particularly suggested by the evidence at hand, but merely because they are all possible; i.e., compatible with the available evidence. The rationale here is quite simply that the more possibilities one considers, the greater the probability of coming upon that one which is correct. Needless to say, sometimes the most farfetched possibility proves to be the correct one.

2. Discuss the use of evidence in the physical sciences (particularly in the more highly formalized ones such as physics). Emphasize the two basic, yet opposing, ways in which evidence is used there. This can be nicely done by taking a hypothetical "home-made" scientific hypothesis, such as the following: "The sun will appear tomorrow because all heavenly bodies get hungry and the sun will be prowling around for something to eat." Then suppose that on the following day, the sun does indeed appear, which is, of course, exactly what the hypothesis predicted. But does this prove the hypothesis? No. At the very least we can say that this evidence is compatible with the hypothesis. But this is a very weak confirmation indeed. This explanation would not even begin to approach the reliability usually demanded of genuine confirmation. Consider other hypotheses which could also account for the evidence: The sun looks for a mate each morning; the sun was doomed forever to rise each morning because the sun disobeyed the gods...We would want some way to decide between these alternative hypotheses before we would wish to say that one of them was confirmed. Then, after all these conditions have been met, the evidence could still never prove one hypothesis, or any other for that matter. No hypotheses can ever be proved beyond a shadow of a doubt; not enough is known about the future, not enough can be known about the unexamined instances in the past. But suppose the prediction of the hypothesis (that the sun would come out) did not come about. Then that would conclusively disprove the hypothesis, simply because reality in that case was incompatible with and contradictory to the hypothesis. Thus, the hypothesis cannot be true. So, in the sciences, negative evidence can be conclusively used to disprove a hypothesis, but positive evidence can never be used to prove a hypothesis. The best one can hope for is more and more evidence which will make a hypothesis more and more likely. Even so, this evidence never proves that the hypothesis is true.

3. Discuss the use of evidence in other fields such as archeology. It is particularly exciting and illuminating to study how anthropologists make use of observations when studying a foreign culture, and how these scientists move from those "bare" observations to an "understanding" of the significant features and dynamics of the culture.

4. Discuss the use of evidence made in a court of law. Emphasize the various rules and procedures developed in the legal system for handling evidence. In a court of law, the analogy to the hypothesis in science is the claim that the defendant is either guilty or innocent. Make sure students appreciate the arbitrary criteria adopted to require, not absolute proof, but proof beyond a reasonable doubt. Make sure they understand both the virtue and the danger of such criteria. Finally, make sure they understand that the hypothesis (i.e., the charge) is objectively true or false (in most cases), and that the amount of evidence or lack of evidence affects the truth of the charge in no way whatever. Evidence affects only the ability of a court or jury to rule with confidence that its verdict is either true or false. Also discuss with students the notion of circumstantial evidence.

5. Have students consider the evidence upon which the results of certain polls are based: the Gallup Poll; the Nielsen Rating for television shows...

6. Present students with passages which involve use of evidence. Have them identify the different parts of the passage: the evidence, the conclusion drawn on the basis of the evidence (or the hypothesis proposed), the assumptions made. Help students become alert to the difference between factual assertions and other statements which involve some value judgement about the factual situation.

7. Have the students consider the different kinds of sources of evidence and assess them for their probative value: eyewitness report, third party description, taped recording, filmed account, letter written by one of participants.

8. Consider the nature of evidence used in literature: The Crucible, The Ox-bow Incident, The Trial, To Kill A Mockingbird. Do the same for actual historical cases: the trial of Socrates, the trial of Sacco and Vanzetti, of Ethel and Julius Rosenberg, of Lt. William Calley.

9. Frequently ask the students to provide the evidence upon which their statements are made. This can obviously be done at any time, not only when discussing evidence. Repeated experiences will get students to become more sensitive to any lack of sound bases in their own words and those of others.

10. Have students become aware of the assumptions they make and the evidence they have for each assumption.

11. Repeat some of the activities listed under assumptions.

12. Conduct a mock "incident" and then have the students all give an account of what they perceived. In the discussion, notice the variations in the reports. But, if it is possible, also try to take account of subjective factors influencing the perception of individual class members.

13. Have students role-play some situation in which one student is the model of the open-minded, thoughtful, objective, critical person and the other student is narrow-minded, biased, uncritical, inflexible, subjective. Discuss how they both "use" the evidence presented to them.

The following is more specifically suited for the lower grades:

14. This activity can help give the students a sense of history. Pick a particular period of history. For example, young students seem to like the period of the dinosaurs especially. Ask them questions such as: What reason or evidence do we have to believe that the past really existed at all? How do we know that things happened in exactly the way we think they did? What kind of evidence would be most reliable in trying to answer this question: Letters? Direct testimony? Third person accounts? Official records? Pictures? Archeological artifacts? Other scientific evidence? Why is one type of evidence better than another? Does the value of the evidence depend on the kind of historical fact in question?

APPENDIX A

Values Discussion
A Vehicle for Teaching Critical Thinking and Reasoning

The following short excerpt is taken from the dialogue of a video-taped session conducted with a group of fourth grade students. Critical thinking and reasoning literally permeate the dialogue. This example illustrates (1) how common and all-pervasive such features are, and (2) how attention can be given to the reasoning skills at any time, while discussing any subject. The skills do not always require special "reasoning activities."

During this session, teacher and students were discussing the carnival dilemma stated on page 5. A girl is taken to the carnival by her father. It is her 7th birthday and he has promised her she can choose any five rides she likes. He discovers he has forgotten his wallet. The last day of the carnival, the distance home too great to go and return before it closes. He can pay the entrance fees. If the little girl lies about her age she can enjoy several rides. He leaves the decision to her. At one point, well into the discussion, the teacher asked the group who chose to tell the truth for the best reason each had for so doing. The dialogue then proceeded as follows:

Liz: What if everybody lied! Just everybody lied! The carnival would go bankrupt. Then there'd be no more carnival anymore. Then no one could go to the carnival.

Walter: But everybody doesn't lie. Sometimes they're honest. Sometimes they're not. More people are honest, than that lie.

Sean: And nobody would know if you lied, anyway.

Walter: Yeah, nobody would know.

Jennifer: But once you start lying, you'll be lying all the time.

Emily: But it's only one little lie. It's not like you lie all the time.

Sean: Yeah, I don't lie all the time. I just lie like once a week.

Lauren: But one lie is something. It's like pollution. You drop one little candy wrapper, and you say "it's only a little candy wrapper." Then you go and do it again. But it all adds. One little candy wrapper is something.

Walter:
Sean
Emily
(all at once) You lie, too. Yeah, you lie, too. Yeah, you drop candy wrappers, too, Yeah, you do it, too.

The response of Liz is directly to the point and relevant to the question that was asked. She is giving a reason why lying would be undesirable in such a case. She is arguing that if everyone lied there would be certain consequences, and that these consequences would be so undesirable that they should dissuade us from lying.

Then Walter's response also is directly pertinent to Liz's point. He is attempting to show her that in reality it will not be the case that everyone lies, and thus we need not worry about the horrible consequences which she predicts. Again, this response is not only pertinent to the discussion, but is also directly pertinent to the comments made immediately before by Liz.

But notice that Sean's remark is "off the track." It's simply irrelevant to the issue now being discussed (though, of course, it is relevant to the issue as a whole). This is because the issue now being discussed is the nature of the consequences to the carnival; and the consequences are unchanged whether or not anyone knows about the lying.

At this point, it would be very instructive to point out to the students how, in one case, the response is perfectly relevant and how, in the other case, the response is simply not pertinent to that particular issue. The issue of whether anyone knows about the lying deserves as much prima facie consideration as any other. But this is consideration distinct from that of the consequences to the carnival, and so this reason should be kept separate. Seeing such examples inevitably helps students learn to detect when arguments begin to stray away from the point being addressed. It also helps them, hopefully, to keep their own comments "on the track." With a video-taped record of such a session, one can easily point out such features of the taped dialogue to the students after the session is over. If one does not have access to video tape, it is still possible to point out such pertinent or irrelevant arguments after a live session. Pointing out such features as they occur would be terribly disruptive of the flow of the dialogue.

In the dialogue, Jennifer's remark is no longer directed to the issue of the consequences to the carnival. She has dropped that issue and has begun on a completely different track, a totally different line of reasoning. She is offering another reason why lying is not recommended in this case. She is claiming essentially that lying in this case would lead one to become a habitual liar.

Then Emily responds by simply denying Jennifer's claim. She does not give a reason why one little lie does not lead to habitual lying. But she does insist that we keep the two distinct--they are

not the same; and she does imply that one does not lead to the other. With just a bit more sophistication, Emily could have pointed out, in addition, that Jennifer was using a version of the slippery slope argument which, without further support, is always fallacious on the face of it.

But then Lauren does provide such further support. Instead of merely stating that the one thing leads to the other, he provides reasons to convince us that this is so. Now the issue at hand has shifted, of course, to whether one lie leads to many lies. But notice that Lauren does not tell us how one lie leads to many lies. Instead, he just tells us that lying is like pollution; then he attempts to show how one little act of pollution leads to a big pollution problem. The implied conclusion, of course, is that the same thing will happen with lying.

Again, a student who had begun to develop skills in critical thinking and reasoning could have easily pointed out that this comparison was an obvious argument from analogy (which, again, is also fallacious without further support). In both cases, facility with particular skills would have greatly increased the sophistication of the exchanges. (Please note that it is not merely the ability to use jargon that is important. For in the first case, the students did make the proper critical response even though they never used the words "slippery slope." However, defined terminology can help students understand why their response was the proper one, why that argument is fallacious, and can also help them learn to identify such arguments more readily.)

None of the students, in fact, pointed out that this was an argument from analogy. But the responses they did make afford another opportunity to draw attention to the features of critical thinking and reasoning present. They gave two replies, both of which were ad hominem attacks upon the speaker, one for each side of the analogy. They were quite simply: "You throw candy wrappers on the ground, too." and "You lie, too." Clearly Lauren's virtue is an inappropriate consideration in determining the merit of his argument. In fact, his arguments were lousy, but not because he was a litter-bug and a liar. Thus, any knowledge the students had of his character as a litter-bug and/or liar should still not prevent them from considering impartially whatever arguments he proposed.

The excerpt from the dialogue was obviously selected because of its great potential for the teaching of critical thinking and reasoning. But this segment is not atypical. The point here is simply that any such dialogue or discussion or conversation with students has the potential for such teaching. The occasion requires only a teacher who understands these valid or invalid

arguments and who can recognize them when they appear. (Notice here again the great need for the teacher to be competent in these skills.) This obviously does not require any special reasoning activities, and, hence, provides an avenue by which attention to the reasoning skills can be given in the course of regular classroom activity.

APPENDIX B

Conducting A Discussion on Values

The teaching of critical thinking and reasoning should take place as an integral part of everything that is done in the classroom. Obviously some activities lend themselves more to this aspect than do others. Also, some activities work more successfully than others at the very beginning of teaching critical thinking and reasoning. In particular, engaging the students in discussions about value-related issues is an extremely fruitful means by which to begin drawing attention to critical thinking and reasoning.

Part I pointed out how critical thinking and reasoning arise in such discussions and also indicated the reason this is necessarily the case. The next point discusses how to conduct such sessions. Again, these suggestions are not sacred prescriptions which cannot be tampered with. These suggestions embody one teacher's experiences and his reflections upon these experiences. Certain approaches work for him. But that is not all. Each teacher wants to develop personal critical skills. Hence, do not accept what is said merely because one person has said it. Evidently some prima facie evidence exists in favor of serious consideration being given to his views. Experience, training, background, and expertise recommend consideration. Your critical attitude will, however, insist that each of you should never accept what one "authority" says solely on the basis of his credentials, but rather on the merits of what he says. And this determination of merit must be made by each one. Thus, this appendix offers more than a list of *do's and don't's*. It includes a brief rationale behind each. If you have read this far, none of the rationale should be at all surprising to you. However, it may prove helpful to have a short statement right alongside the procedural suggestion. After you have read the suggestion and the reason why the suggestion is made, then you can decide for yourself how meritorious the suggestions sound. Furthermore, after you have tried conducting such sessions, you can see for yourself how sound these suggestions are.

Before specific suggestions of *do's and don't's*, some general comments are pertinent when this issue of values in the classroom arises.

FACING UP TO VALUES

As teachers, many find themselves plagued with questions, concerns, reservations, apprehensions, and outright fears when facing the issue of values in the classroom. But, if

education is intimately concerned with the development of persons, then it will inevitably touch upon values--that system of beliefs, ideas, and standards by which individuals decide what is important, good or bad, right or wrong. Values inform a person's life and guide his or her most important actions.

If a teacher concludes that she or he must deal with values in the classroom, the first step is to bring any fears out into the open so they can be faced and dealt with. Some of these are:

--Values are not the proper concern of the teacher, the school, or the educational system.
--As a teacher, I have no special qualifications or expertise for such a task. Moreover, anything I say would be just one person's opinion.
--There is the ever-present danger that parents will think I am trying to undermine the values that they have imparted to their children and/or to indoctrinate students to my own views.
--No matter how careful, objective, or neutral I try to be, young students will inevitably be influenced by my views.
--Such discussions never seem to "get anywhere," nothing is ever resolved.
--Such activities are an inefficient and wasteful use of time.
--I do not have all the answers.
--In such discussions, a point might be reached when I would not know how to respond.
--I might be put in an embarrassing spot.
--I will probably find that at the end of the discussion, I won't know how to tie it all together.
--The class might end up with an "immoral" conclusion.
--Such discussions might awaken "sleeping tigers"; that is, might open up volatile areas of great controversy and lead to dissension and antagonism within the class.
--I, or the class, might trespass on sacred preserves or intrude into areas that a given person may be either incapable of and/or unwilling to open up for scrutiny.
--Such activities set a bad precedent, since students will eventually want to open up everything.
--Such activities would only serve to make students disillusioned and cynical; they would inevitably find that they could not apply this open, critical approach to many other areas of their life--classes and home, *vis-a-vis* authority figures, etc.

Cautions

--*I never make (substantive) statements--only ask questions.* My objective is not to give students my ideas about what is important or relevant to consider, what is best or what is right. I seek to help them become more consciously aware of their own ideas, the adequacy of those ideas (in light of their experience), and how those ideas bear upon their decision.

--*I never give my judgment or opinion until the end.* In the eyes of students, a great deal of status and "authority" is associated with a teacher. I do not want the students to be unduly influenced by what I think about an issue. Thus, I only divulge what I think after they have an opportunity to think about the issue and discuss it themselves.

After the students formulate substantive supports for their positions--tested against the opposition of their classmates--they are not as tempted to accept my position just because it came from me. (It is very important for the teacher to indicate his or her position at least sometimes. Students, like other human beings, have no desire to be associated with mere "questioners," "inquisitors," or "facilitators." They prefer, instead, a real person, who has feelings, attitudes, judgments, indecisions and who is not afraid to express them.)

Once when the writer did finally "confess" his own resolution of a dilemma, the group of children in agreement with his answer took the writer's opinion as a vindication of their judgment, as an indication that they had "won." But before they could let out a cheer, a girl from the "losing" side called out, "But his opinion doesn't make it right!" Music to the writer's ears.

Here was a person who had thought through this dilemma and reached a judgment of her own. She was very much aware that her position should not be surrendered simply because I disagreed. Needless to say, I strongly commended such autonomy and independence, being careful not to equate it with being close-minded or ignoring what anyone else thought.

--*I never make a value judgment about anything said by one of the students.* It is simply a fact that different people differ in judgment about particular issues. I wish to offer my own opinion only as one more, among others, to be considered.

--*I don't try to achieve consensus.* Ethical issues cannot be resolved like a jigsaw puzzle that has only one solution or a math problem that has one correct answer. Since there is no one right answer, then there is no need to get everyone to "see" it. Therefore, we can begin to debunk the myth that says,"We differ, I'm right, so you must be wrong."

On several occasions, I went even further than the "more than one right answer" concept. When students simply could not make up their minds, I tried to help them see that it is perfectly legitimate and respectable to suspend judgement and say "I just don't know."

Following are some of the things I deliberately do do in dealing with values:

Do's

--*I encourage students to focus on why they hold the positions they do.* My major concern is not with the students' particular positions, but rather with how they arrived at them. I want them to concentrate on the reasons, the considerations that led them to their positions.

The problems the students face will change as their lives progress--and so will the answers. And even when the problems do not change, the answers sometimes will. Thus, undue concern with "answers" will not offer any long-lasting benefits. But once the student has begun to master the process by which he or she arrives at answers and understands the why behind them, the ability to deal with the changing character of the problems that arise will follow.

I remember one discussion that showed a group of children how people can take the same course of action, but for widely varying reasons. I was dealing with a dilemma in which a girl must decide whether to lie about her age to enter a carnival at half-price and have enough money left for rides or to be truthful and miss the rides.

Some children said they would tell the truth because their guilt would prevent them from enjoying the rides anymore; some, because they thought their fathers (the girl's father accompanies her in the film) could never trust them again if they didn't; some, because they were afraid of being caught; some, because they wanted to be fair to the carnival owners. Thus, while many children had the same "answer," they had very different reasons for arriving at it.

--*I encourage students to respond to the statements of their classmates, rather than having each person present a "position paper."* I do this for two reasons. First, a student's position will be much stronger (and based on greater confidence) if he or she will make an attempt to counter criticism and conflicting opinions. If the strengths of the others' positions and the weaknesses of the student's own position are considered, a student's final stand will be more realistic and secure.

Second, this approach promotes dialogue. If a person makes a point that he or she thinks is relevant and important, it merits a response. This is done in the interest of arriving at the "truth" and because each person's opinion is of value and deserves consideration. Also, since we are trying to understand, due consideration of each one's contribution helps us toward that goal.

--*I discourage students from thinking that the object of the discussion is for one position to "win."* We are not having a debate; the object is for individuals to try to determine the merits of the case and then to decide accordingly.

Even though there may be proponents for opposing views, this activity can be seen as a joint enterprise in which there are no "winners" because there are no "losers." By approaching a problem in this way, it is possible for a participant to change his or her mind. In one class, a boy agreed with the group that chose to lie in the carnival dilemma. But, during the discussion, a girl from the opposing side said that lying would not be fair to the other children of the same age who told the truth and paid the full price.

The boy said he had never considered that point of view. And when he did, it was enough to change his mind. He switched sides and said that he thought the reasons in favor of telling the truth were better. The student was able to get beyond proving one side right to discovering what would be the right thing for him to do. This kind of reversal did not happen frequently, but it did occur more than once.

--*I stop the discussion without ending it or without seeking a definitive resolution.* I hope that the students' consideration and discussion of the dilemma will continue beyond the limited time we have together--with each other, with their friends, with their families. I try to help them get over the all too common idea that every human drama and dilemma is resolved--usually happily--within the confines of one T.V. program's time slot. Also, I let them know at the end of the discussion that I cannot provide the definitive resolution for them.

--*I try to legitimatize noncognitive, nonrational elements that might enter into a human decision.* There is more to a human being than rational, cognitive, intellectual processes. There are religious views, faith, beliefs, feelings, needs, fears, etc.--all crucial to our lives. These factors can be accepted as important, partial bases on which some decisions are made--but not blindly. We accept them because their existence is a fact, but we can examine them critically.

For example, we can trace an action's consequences, note its limitations, and determine its compatibility with our other values, ideals, and so on. If, after all that, we still cannot provide a cogent defense for our position, but feel that we must maintain it, it can be recognized as a judgment not solely of the mind but of our total self.

--*I try to help students see that they can be open-minded and still retain the capacity to be committed.* It is possible for students to develop a critical attitude without becoming cynical about everything. They can still have something to "believe in." That something may no longer be exactly what it was before. Their critical scrutiny may reveal some shortcomings, some drawbacks, some "feet of clay." But that same double-edged critical sword can also reveal whatever strong points remain.

Then if, in the student's judgment, the strong points outweigh the weak, he or she can believe in and be committed to what is strong about a particular position. This will be a commitment that is less blind and naive and more "open-eyed" and realistic--one in which the students can gain confidence from a more accurate assessment of the strengths and weaknesses of the position they take.

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APPENDIX C

Critical Discussions and the Formation of Commitments

Procedural Agreements or Commitments Underlying Critical Discussion

Critical discussions introduce students to what might be called *philosophical commitments*. These commitments make a critical discussion possible. Whenever persons seriously seek to resolve a dilemma or think their way through a problem, there are certain procedural principles to which they must be committed. These commitments involve:

. Doing certain things in a certain way;
. establishing and observing certain criteria;
. adopting certain attitudes toward the endeavor itself.

These procedural agreements are always needed, but the need is especially evident when the endeavor takes the form of a social enterprise involving several people. These commitments can be formulated along the following lines:

1) Commitment to Impartiality and Objectivity. The idea here is simply that, during his deliberations, a student should not give undue weight to any particular person or interest--unless there are relevant reasons for doing so. This means he will give due (not necessarily equal) consideration to every proposal made, to every issue uncovered, to every objection raised--with as much of an "objective" viewpoint as he can. As a corollary, he will also not give undue weight to his own position, merely because it is his own. This commitment is necessary in order to insure that all sides of the issue are considered, and that no viewpoint or position is prematurely screened out by any sort of biased preselection.

This guarantee of impartiality and objectivity is required by the very nature of the enterprise itself; in philosophical inquiry we seek to arrive at the best understanding we can of a particular issue, and, in order to do that, we must attend to all considerations which are significant for this issue. We will usually decide that some points are less significant than others. But this can only be done after they have been given due consideration--as opposed to being ruled out even before being considered for their significance. And this fair consideration is all the commitment requires.

Just as the very nature of the philosophical enterprise requires this commitment, so does the nature of the teacher's enterprise with the students require this commitment. For the student's objective is to understand the nature of the dilemma, see clearly the several issues involved, and arrive at the best

possible resolution of that dilemma. In practice, this commitment to impartiality and objectivity means that a student should not give any more weight to a suggestion made by a best friend than (he or she) does to any other, nor any less to one made by a "worst enemy," nor any "special" consideration to one made by the teacher.

2) Commitment to Considering Only Relevant Criteria. This commitment is important because the participants might all be perfectly impartial and objective, but might be considering points completely irrelevant to the issue at hand. This commitment, in and of itself, will not, of course, determine which considerations are irrelevant. But it does indicate awareness that such a distinction can be made, and provides the inclination to try to make it. Note here that the task of deciding which considerations are the relevant ones can be exceedingly difficult. Obviously, the context of the situation will influence which considerations will be relevant in a given case, and this context, of course, will vary. For instance, a girl wants to join an all-boys little league baseball team; the decision is left up to the players. The fact that she is the best shortstop in the neighborhood seems to be a relevant consideration in deciding to accept her on the team. But there might be equally relevant considerations which would lead one to reject her; for example, the girl has asthma. On the other hand, the fact that she is a girl seems to be completely irrelevant to deciding such an issue. Regarding a different issue, however (for example, in casting for the role of Ophelia in Hamlet) the candidate's being a girl seems decidedly relevant.

These are fairly obvious, easy cases. However, if the participants in this social enterprise seek to arrive at the best possible understanding of the problem and the best possible resolution of the dilemma, then they must be commited to consider only those criteria which are most significant and relevant to the issue at hand. Failure to do so would seriously jeapordize any chances they might have for success. Thus, given the rationale behind the enterprise to begin with, participants must be committed to consider only relevant criteria.

3) Commitment to Consistency. Students must strive to make their thought and statements at one time compatible with those at another time. This is necessary if the discussion, as a whole, is to be at all comprehensible, if the different portions of the discussion are to "fit together," and if discussion is to make any kind of cumulative progress toward its objective. This commitment means that it is not "acceptable" or "appropriate" for one to make a statement that is patently contradictory to any of one's previous statements. In practice, this also means, for instance, that if a student raises an objection to one of his classmates, he must be willing to consistently apply the same criterion to himself. To fail to do so would be "special pleading," just another form of inconsistency.

4) Commitment to Comprehensive Thinking. This commitment means participants must strive to apply these principles to every aspect of their endeavor. They cannot adopt this critical attitude in some areas of consideration, and ignore it in others. There thus can be no "sacred preserves" which lie beyond the reach, a priori, of this critical approach. They must be willing (at least in principle) to subject to critical scrutiny everything that might arise during the course of the inquiry. This is necessary in order for the students to protect themselves against uncritically making assumptions, or accepting statements, claims, etc., into their considerations which examination could show to be unwarrantable. And this can only work if all aspects and possibilities are subject to such examination.

5) Commitment to Equal Regard for Individuals as Resources. Participants must be committed to respecting each other person in the discussion as a possible source of valuable information, relevant considerations, or persuasive arguments. This is so because, given that the student's prime objective is to arrive at the best possible solution, then it is at least secondary (and at most irrelevant) from what source that solution comes. This means that the student will consider each participant as an equal member of the group, a peer, and a partner in this search. Thus, even if a student does not "like" one of his classmates, he must still be committed to at least leaving open the possibility that his "enemy" might say something important. Hence, he cannot automatically "tune" anyone out.

6) Commitment to the Search for Reasons. The participants must be commited to the search for reasons, defensible reasons, as the basis upon which to make their decisions and determine their behavior. This commitment must be accepted or else there would be no sense in jointly discussing reasons in the first place. This means that the student will strive to make decisions not solely on the basis of personal whim or caprice, or what his friends do, or impulse, or prevailing opinion, or what his teacher thinks or says. He will strive to decide because of the merits of the case that can be made for or against a particular position.

These commitments are absolutely necessary for any social enterprise in which a group of people try to think their way through something. Critical inquiry and discussion could not proceed, would not be possible, without commitments to such principles on the part of the participants. This is true of critical discussion at every level from the most sophisticated to the most elementary. And clearly, this is just as true of the discussions with children as well as adults on "what they would do." It is necessary for these principles to be operative in all critical discussions. Thus, participants must be committed to such principles.

APPENDIX D

Critical Thinking and Reasoning:
An Influence in Behavioral Change?

The question has been asked, "What reason do we have to believe that 'rap sessions' with students and adults will lead to any real change in behavior, or that any of the platitudes so easily expressed during such discussions will actually show up in their behavior?" The questioner might have further added that, "Unless there is some real effect on the behavior of the students then this has just been a parlor exercise which really accomplished nothing." This is a legitimate concern.

Before addressing directly the question of behavior, two preliminary remarks are in order. First, one must be clear as to whether one is insisting on behavior per se, or whether one will settle for any effect whatsoever. If the latter is acceptable, then even although such discussion has no effect on behavior, it can still be judged worthwhile as long as it produces some effect or other. In that case, attention need not be restricted to merely overt behavior; the effects on the "interior life" of the student could be considered also. These effects, while generally more difficult to detect, obviously need not be any less worthwhile.

There are two possibilities regarding these "internal" effects: 1) They have absolutely no connection with behavior in any way, 2) these internal effects do eventually "show-up" in external effects; i.e., overt behavior. This "indirect" effect is something of a middle ground between no effect on behavior at all (i.e., purely internal effect) and immediate change in overt behavior.

Secondly, even in the case of purely internal effects, it does not follow necessarily that the activity in question would be judged--for that reason--to be a completely worthless one. For surely, not every single activity has as its sole standard of merit the effect it produces in the behavior of one who engages in it. Many activities can be chosen or not chosen, which are thought of as enjoyable, desirable, valuable, respectable, even though they produce no noticeable change in behavior patterns: listening to music, cooking for friends, drinking wine, going for a walk through the leaves, to mention a few.

It is important to realize that inquiry into the effect of such an activity on the behavior of the students may mean applying a criterion which in itself deserves as much consideration

as any other norm, but which is nevertheless a criterion which is not applied to many, many other "worthwhile" activities.

Now, with these preliminary *caveats* made, this appendix can address directly the question of the effect on behavior of such activities. To obtain any substantial, long-lasting benefit from such discussions, teachers must make discussions of this type an on-going, enduring feature of the student's experience--and not just in the classroom. This cannot be a one-shot affair--nor even an irregular and infrequent one.

Suppose that a student has been immersed, as a participant, over a period of time in this kind of critical discussion. Such experiences lead to certain commitments on the part of the student. These commitments are summarized on pp120 to122. How the formation of these commitments affect the behavior of the student is now the focus.

By way of example: On the playground, one of the boys from the class is on the verge of beating-up one of the girls from the class. Now, there is always the possibility that the boy will act completely on impulse, or that emotions run so high as effectively to short-circuit all rational, deliberative processes. Then, probably none of these commitments will make the slightest difference whatsoever. Assume that the boy's frustration is not at this level. Now, on the admitted assumption that it is "better" for him not to beat his classmate, will these commitments formed by him in class in any sense incline him to do the "better" thing, in short, to behave in the "better" way?

The first two commitments had to do with giving impartial consideration or treatment in all cases, unless relevant reasons exist for doing otherwise. The difficulty obviously is in determining whether there are indeed relevant reasons. And this will change from situation to situation. For suppose this same boy was considering not whether to beat up his classmate, but whether to ask her to play on his baseball team. Here, two considerations would warrant giving her partial consideration which no one else received: 1) She is the best shortstop in the school; 2) she has asthma. For this particular activity (i.e., playing baseball) these are indeed relevant reasons why she should be treated differently. (There may, of course, be more compelling reasons why she should be treated the same.) And it is only because of the existence of such reasons that it is justifiable to do so. But consider now, the activity of beating her up. Regarding this activity, there seem to be no relevant reasons for treating her differently. And, in the absence of any such reasons, she should not be treated differently; i.e., she should not be beat up. Thus, the operation of this commitment in the student's reflection would tend to influence his behavior.

The third commitment had to do with consistency. This commitment would help the student become sensitive to whether his actions (i.e., beating up his classmate) are in accord with or consistent with those values he may espouse or beliefs he may have; that is, beliefs about not wilfully hurting others. This commitment would also help the student become sensitive to whether his action at this time is compatible with other of his actions at other times; that is, whether his fighting his classmate without reason on this occasion is compatible with his refusal, on other occasions, to join in fights which were started just for the fun of it. Thus, if this commitment is operative for this boy at this time, it would incline him to at least inquire as to whether his contemplated action is in keeping with his beliefs. Hence, if he has some beliefs in fairness, or in not needlessly causing suffering to others, or in the right of each person to carry on his or her life unmolested, then he might be inclined to refrain from his action if his inquiry suggests to him that this action is incompatible, inconsistent with these beliefs.

The fourth commitment had to do with being comprehensive in our thinking. This commitment would help the student avoid "applying" what he has learned in just some situations and not others. This would tend to keep the student from applying these principles just in class or just in "philosophical" discussions, or just when others are around. Rather, true understanding of this commitment will help him to see that this critical, reflective attitude must permeate his life, all his discussions, all his relationships, all his actions--including this action on the playground. This commitment would thus tend to insure that the other commitments are considered in this instance, and that the boy would at least think about how the principles learned in class mesh with this contemplated action.

The fifth commitment had to do with respect for each other person as a possible source of information, considerations, or arguments. This alone is not the same as respect for each other person as one who possesses rights, has feelings, has interests, deserves consideration, etc. A person may grant this first kind of rational, intellectual respect in much the same way one respects a dictionary or encyclopedia as a source of information--without extending it to the latter kind of respect for the person as a person, not as a resource, or encyclopedia, or computer. Only this latter kind of respect will result in the "good" behavior. But it is very difficult to maintain the former kind of respect without extending it to the latter also. So now, on the assumption that this extension is likely, the boy on the playground will tend to respect the girl as one who has rights of her own, feelings of her own, just as he does. In short, he respects her as a person.

This comes about in large part because of the empathy which the boy can feel for her, and to the degree to which he can feel and understand what it is like to be her. By so doing, he can see that in some salient respects she is no different from him--and he does not like to be beat up.

Finally, there was the commitment to search for reasons as the basis upon which to make decisions and determine behavior. If this commitment has taken hold, it tends to insure that the student is concerned that his actions not be based solely on feelings, nor that his actions be the result solely of impulsive, spur-of-the-moment inclination. Rather, he is concerned that his action is, in some way, justifiable. And this justification will come about because of the reasons that can be adduced in support of that action. Such a person is committed to having such reasons, such justification, before they act. Hence, the boy in the playground will be committed to having defensible reasons to justify this action before he proceeds to beat up his classmate. And if he can discover no such reasons, no such justification, then he will tend not to carry through his action.

In conclusion, two consequences seem to follow: 1) Participation in critical discussions such as those described here will lead to the development of certain commitments on the part of the students, and 2) these commitments will tend to "spill-over" into their actions and behavior apart from the discussions. Such discussions may not unfailingly produce students who are "better behaved." But such discussions do achieve this: they provide a splendid opportunity for students to gain certain experiences, to witness certain principles at work, to accumulate certain learnings. These experiences, learnings, insights will affect the student's perception of himself, his classmates, his teacher, the world around him, and the nature of his interaction with all these. None of this will guarantee a change in behavior in perfect accord with set standards. But such experiences will tend to produce a more responsible individual. Now, how this shows up in behavior is still anybody's guess. But this is as much as anyone can ever hope for--if one wishes to preserve for other individuals their moral autonomy.

Checklist for Exercises

* Answer is not provided

Exposition vs. Argument (pages 27-30)

1. Exposition
2. Exposition
3. Exposition
4. Argument
5. Argument
6. Exposition
7. Exposition
8. Exposition
9. Exposition
10. Exposition
11. Exposition
12. Argument
13. Argument
14. Argument
15. Argument
16. Exposition
17. Argument
18. Argument
19. Argument
20. Argument
21. Argument

Deductive vs. Inductive (pages 31-33)

1. Inductive
2. Inductive
3. Inductive
4. Deductive or Inductive depending upon assumptions
5. Inductive
6. Inductive
7. Deductive
8. Inductive
9. Deductive
10. Inductive
11. Deductive

Conditional Arguments (pages 38-41)

1. Valid, Modus Tollens (MT)
2. *
3. Valid
4. Valid
5. Invalid
6. Invalid, Denying Antecedent (DA)
7. *
8. *
9. Invalid, DA
10. Invalid, Affirming Consequent (AC)
11. Valid, MP
12. Invalid, AC
13. Valid, MP
14. Invalid, AC
15. Valid
16. Valid, MT
17. Valid
18. Valid

Syllogisms (pages 50-53)

1. Invalid
2. Invalid
3. Invalid
4. Invalid
5. *
6. Valid
7. *
8. *
9. Invalid
10. Valid
11. Valid
12. Valid
13. Valid
14. Valid
15. Invalid
16. Invalid
17. Valid
18. Invalid
19. Invalid
20. Invalid
21. Valid
22. Valid
23. Valid
24. *
25. *
26. *
27. *
28. *
29. *

Assumptions (pages 56-58)

1. Tax increase justified only if income increases.
2. Larger classes justified only if one receives more compensation.
3. Students like to miss classes.
4. People who teach at the college level want their children to attend a "good" college.
5. A smile always indicates happiness.
6. Emperor Hirohito favors anything which is a big part of Japanese industry.
7. All marine biologists are against whale hunting.
8. No one who scores below 100 on IQ test can learn calculus.
9. The principal always squashes plans which he does not like.
10. Foreign aid is given for one reason only, to get other nations to support us in the United Nations.
11. The only reason for obtaining a degree in education is to prepare oneself for a teaching job.
12. Studying harder unfailingly results in learning more.
13. Anyone called a Child of God is blessed.
14. Ex-cons are untrustworthy.
15. All with degrees from Harvard Business School are very successful.
16. Anyone who knows the state of the economy would not resign.
17. Representatives from rural areas will inevitably oppose such a bill.
18. A) Only reason for teaching values is to see "results" in behavior.
    B) If one has not seen "effects" yet, then teaching was in vain.
19. All Catholics must agree with Pope on all issues of morality.
20. Any argument with missing premises must have a false conclusion.
21. New York City (NYC) and Mass. line are on a straight line.

22. Both you and the dog have the same detection (i.e., sensory) apparatus.
23. It is better not to look older.
24. Any washer which sprays up from the bottom...will do a fantastic job.
25. A syllogism cannot have four terms.
26. The average student in the class reads one year above level.
27. You're not a good man. (Though this was clearly the intended message, notice that, strictly speaking, this follows only if the original phrase is changed to: Only good men die young.)
28. *
29. One must believe in God to be moral.

30. A) The blood type of a child is identical to that of at least one of the parents.
    B) The boy was not transfused at birth.
31. A woman is "supposed" to look younger--or, at least, younger than her husband.

Use of Language (pages 61-63)

1. "Chisellers" is a pejorative term. Also, use of this term begs the question; i.e., the very use of the term already pre-judges the right of such persons to receive assistance.
2. "Handouts" is a pejorative term. Also, this a doubtful evaluation.
3. Is voting record the sole criterion by which to judge usefulness to society? Even if not the sole criterion, is it at all a useful or valuable one?
4. *
5. *
6. *
7. Use of flattery.
8. Use of "finally" suggests that such legislation is long overdue, without explicitly saying so.
9. Suggestion by insinuation and innuendo. Very common.
10. Suggests that in other forms of government men are not free to exercise their rights.
11. Suggests that Cohen is the only candidate who appreciates the problem.
12. There is a suggestion--or hint--that he was not allowed to return before his death.
13. Implication made that the resignations came because of the investigation, and, furthermore, that the resignations implied guilt of some kind.
14. Message: this is a hard-working man--just the kind of man we need for this job.
15. Message: here is a family man; a solid, upstanding citizen.
16. Double Entendre. Meanings on two levels.
17. Attempt to discredit a cause by pointing out that only a few support it. Is the rightness of a cause determined by the number of people who support it?

18. *
19. *
20. *
21. *
22. *
23. *
24. *

Fallacies (pages 69-75)

1. Two wrongs make a right.
2. Ad hominem
3. False dilemma
4. Cliché
5. Hasty Generalization
6. Hasty Generalization
7. Hasty Generalization
8. Appeal to Pity
9. Appeal to Authority
10. Argument from Analogy
11. Appeal to Authority
12. Ad hominem
13. Ad hominem
14. Appeal to Pity
15. Hasty Generalization
16. Appeal to Popularity
17. Hasty Generalization
18. Irrelevant reason, ad hominem
19. Irrelevant reason, ad hominem
20. *
21. Hasty Generalization
22. Oversimplification
23. False dilemma
24. *
25. Appeal to Popularity
26. Hasty Generalization
27. Appeal to Authority
28. *
29. Appeal to Tradition
30. *
31. Irrelevant reason (i.e., his being a veteran)
32. *
33. Appeal to Flattery
34. Appeal to Authority (i.e., winner of Pulitzer prize)
35. False dilemma, exaggeration, distortion
36. *
37. *
38. *
39. *
40. False dilemma
41. *
42. *
43. *
44. *
45. *
46. *
47. *
48. *
49. Ad hominem
50. Circular reasoning
51. *
52. *
53. *
54. Argument from Analogy

Use of Evidence (pages 81-84)

1. Selling a lot does not show that the item is good, only that it is popular. Also, in an airport, relatively few are repeat customers.
2. Studying all the time does not show that Charlie is a good student. In fact, he might study so much because he is a poor student. He might study all the time in spite of the fact that he is a good student.
3. The "evidence" of resignation could be perfectly coincidental to the investigation. Of course, if this is added to other evidence, then the conclusion could become more plausible.
4. *
5. Rogers could be a monster to live with. Perhaps it is easy for him to talk about being a warm person, yet difficult for him to act so.
6. *
7. She might have received bad news lately; there might be a crisis in the family; she might be facing a life-and-death decision. Any of these could easily account for the evidence; i.e., the symptoms.
8. *
9. *
10. *
11. It is possible that while the person listens to jazz, he or she is generally in a better mood and hence tends to take better care of the plants. This could easily account for their improved growth. It is also possible that for some other presently unknown reason, the person tends to listen to jazz during the growing months, and to classical, etc. during the dormant months. In short, the evidence presented here is worthy of consideration, but not conclusive.
12. This seems to be a simple example of a far-fetched hypothesis, given the evidence. It would seem much more "sensible" to conclude that the violence on T.V. did find its way into the behavior of the children, to some degree or other.
13. The evidence is factual and incontrovertible. The conclusions drawn might very well be true. But the strength of the connection between the evidence and the conclusions is weak.
14. The writer seems to take true evidence and twist it to serve a desired conclusion. The obvious alternative explanation for these facts is that exertion of the cardio-vascular system pumps blood away from the stomach, causing appetite to decrease.
15. This hardly proves any telepathic communication. It is probably just a coincidence.
16. *
17. *
18. *

Selected Bibliography

The literature of resources immediately useful to the teacher is limited. The following selection, covering the last ten years, lists books and non-print materials found to be most helpful. Since the essential first step is for teachers to develop and improve their own critical skills before classroom implementation can take place, the first three books are highlighted for just that purpose.

Beardsley, Monroe C., Thinking Straight: Principles of Reasoning for Readers and Writers (3rd edition). Prentice-Hall, Inc., Englewood Cliffs, New Jersey. 1966.

Discusses important skills of deduction, definition, use of language: what is involved, worked-out examples, practice exercises; written for the general reader.

Kahane, Howard, Logic and Contemporary Rhetoric: The Use of Reason in Everyday Life. Wadsworth Publishing Co., Inc., Belmont, California. 1971.

Discusses common fallacies which occur in everyday language, especially in political speeches and advertising; also covers use of statistics, media manipulation of candidates, managing news, and textbooks and indoctrination; for the general reader.

Vernon, Thomas S., and Nissen, Lowell, A., Reflective Thinking: the Fundamentals of Logic. Wadsworth Publishing Co., Belmont, California. 1968.

The following selections are more advanced logic texts:

Barker, Steven F., The Elements of Logic, McGraw-Hill Publishers, New York City, New York. 2nd edition. 1974.

Copi, Irving M., Introduction to Logic, Macmillan and Co., Publishers, New York City, New York

The following sources relate to critical thinking and reasoning in general, or develop specific features involved in the teaching of these skills.

Aylesworth, Thomas G., and Reagan, Gerald M., Teaching for Thinking. Doubleday and Co., Inc., Garden City, New York.

An excellent discussion of important issues: reading and thinking, critical thinking and value judgments, critical thinking and settlement of disputes, critical thinking and language alternatives of methodology; includes dialogues between teacher and student with analyses indicating the use of such interchanges in enhancing critical thinking.

D'Angelo, Edward, The Teaching of Critical Thinking. B. R. Gruner, Publishers, Amsterdam, The Netherlands. 1971.

Discusses the nature of critical thinking and the requisite skills; features discussion of particular, concrete suggestions for classroom use in various subject areas; includes extensive bibliography.

D'Angelo, Edward, "The Teaching of Critical Thinking through Literature," (unpublished manuscript). Department of Philosophy, University of Bridgeport, Bridgeport, Connecticut.

Evans, Clyde, "Facing Up to Values," Teacher, December, 1974.

Proposes procedural and substantive features, with rationale for each, of typical classroom discussions designed to enhance development of critical thinking skills especially as these involve value-related issues.

Passmore, J., "On Teaching To Be Critical," Education and the Development of Reason. Editors: Dearden, Hirst, Peters. RoutIedge and Kegan Paul, publishers. London, England. 1972.

How teaching to be critical differs from teaching other skills or other subject matters; the demands such teaching places upon teachers.

Peltier, Gary, and Bartl, Charles, "Using Classroom Tests to Promote Critical Thinking," Clearinghouse, 48:476-9, April, 1968.

Covers ways in which tests, examinations, grades, classroom practice, and study habits can stimulate development of critical thinking abilities.

Skinner, Ballou, "The Myth of Teaching for Critical Thinking," Clearinghouse, 45:372-6, February, 1971.

Discusses why, even though teachers profess the importance of teaching critical thinking, they rarely follow through.

"Special Symposium on Thinking and Learning," Today's Education, 64:42-51, March, 1975.

Topics include: how each culture embodies its own distinctive cognitive system and how this system affects our thinking, misunderstandings about how children learn; the school's reputed destruction of the child's "love of learning"; the role of intuition in learning.

The following selections are general reading.

Brown, George Isaac, Human Teaching for Human Learning, An Introduction to Confluent Education, Viking Press, New York, New York 10022. 1971.

Friere, Paulo, Education for Critical Consciousness, A Continuum Book, The Seabury Press, New York. 1973.

Gordon, Donald R., Language, Logic and the Mass Media, Holt, Rinehart and Winston of Canada, Ltd., Toronto and Montreal. 1966.

Rogers, Carl, Freedom to Learn, Charles Merrill Publishing Co., Columbus, Ohio. (Contains extensive bibliography). 1969.

Schwartz, Barry N., editor, Affirmative Education, A Spectrum Book, Prentice-Hall, Inc., Publishers, Englewood Cliffs, New Jersey. 1972.

The following two selections are excellent sources for ideas in writing and compiling critical thinking tests:

National Council for Social Studies, 35th Yearbook, Evaluation in Social Studies, Washington, National Educational Association. 1965.

Bloom, Benjamin S., editor, Taxonomy of Educational Objectives: Handbook I, Cognitive Domain. David McKay Co., Inc., New York. 1961.

The following are materials which either deal directly with critical thinking, or which help to create situations conducive to the learning of these skills.

First Things, Guidance Associates, 757 Third Avenue, New York City, New York, 10017. A series of sound-filmstrips for the elementary grades which deal with ethical issues: telling the truth, keeping promises, breaking the rules, and others. Each filmstrip ends with an unresolved dilemma.

Society and Mankind, The Center for Humanities, Inc., Two Holland Avenue, White Plains, New York 10603. A new audiovisual program for human development and guidance, social studies, art and science for the high school level. Uses slides, tape cassettes, and records. (There is a limited version for middle school level). The breadth of topics covered is impressive.

Critical Thinking Aids, Modern Learning Aids, 1212 Avenue of the Americas, New York City, New York, 10036. A series of sound filmstrips dealing with decisions in American History.

Lipman, Matthew, Harry Stottlemeier's Discovery, Institute for the Advancement of Philosophy for Children, Montclair State College, Upper Montclair, New Jersey. This is a novel which raises certain fundamental philosophical issues and basic philosophical methods of reasoning. There is also a Teacher's manual available. Designed for 5th and 6th grades. 1974.

Lipman, Matthew and Sharp, Margaret, Instructional Manual: to accompany HARRY STOTTLEMEIER'S DISCOVERY, Institute for the Advancement of Philosophy for Children, Montclair State College, Upper Montclair, New Jersey 07043. 1975.

This valuable resource reprints chapters from the novel cited above, then provides an analysis of the discovery methodology exemplified in it. Contributors include Leonard Berman and other educators involved in philosophy for children.

The sequel to Harry Stottlemeier's Discovery is now being prepared, and should be available, together with an Instructional Manual, in 1976.